The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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The British Industries Fair

ALL accounts agree as to the success of the opening stages of the British Industries Fair, both in London and in Birmingham. The Prince of Wales, in an admirable speech at the Mansion House, summed up the meaning of the Fair and the lessons to be drawn from the present condition of industry. Among the conditions which he emphasised are the substitution of mass production, which necessarily involves large central plants of more or less standardised design in place of innumerable small units of widely varying design. Everyone feels a certain sympathy with the small concern, with its personal management and contact with employees, and very often its economical and efficient working in spite of limited resources; but competition with the great centrally directed concerns of Germany and the United States has made similar central organisation in this country imperative, and with the object of securing cheap production and wide distribution the tendency to-day is all that way.

It was interesting to hear the Prince so emphatic on the need of efficient advertisement of British goods and of increased attention to the arts of salesmanship. With some experience of the importance attached in the United States to expert salesmanship, we have on previous occasions suggested the more definite organisation of those engaged in salesmanship in the chemical industry, where expert knowledge is one of the essential qualifications. There is no reason why some simple association of those specially interested in this side of the business should not be formed, and the Prince's suggestion as to recognised courses of study or of lectures, with occasional conferences for discussion of publicity and marketing methods, is well worth consideration. The specifically chemical exhibits are limited to the London Section, and the complimentary acknowledgment by the Prince of Mr. Woolcock's services in this field this year as in past years was a pleasant incident in his Mansion House speech. The exhibits are noted more in detail elsewhere in this issue, and next week we hope to be able to record that the promise with which the Fair has opened has been completely fulfilled.

Though the Birmingham section does not specifically include chemicals, there are many exhibits with a definite chemical interest. For instance, there are being shown applications to wood and metal surfaces of the cellulose finish Belco, a product of Nobel Chemical Finishes, Ltd. These finishes, we understand, are actually being used by one of the biggest metal filing cabinet manufacturers in the country, and Belco has also been applied to several coaches on two of the great English railways. The coaches are in use as a test of durability of this type of finish, and from recent reports to hand it is giving satisfaction. Other exhibits are pedestal and counter weighing machines, bronze taps and meat covers, and other articles showing the application of Necol glossy enamels, another product of Nobel Chemical Finishes. Furniture trade visitors will be interested in the Belco wood finish for furniture, which is said to have many advantages over the ordinary french polish, and will withstand heat and the damaging effect of weak acids and alcohol.

In addition, International Combustion, Ltd., are exhibiting, among other things, their model Raymond mill, suitable not only for pulverising coal, but for grinding other materials, ranging from barytes to ochres; a Lopulco feeder of a new design; a section of a Lopulco combustion chamber showing the arrangement of the Murray walls, the firebrick and the insulating material; the Murray wall tubes for lining the sides of the combustion chamber; and the "Usco" unit pulveriser in one of the smallest sizes. The associated Underfeed Stoker Co. are exhibiting an "Usco" air heater; impelled draught furnace fronts, a half-way method between hand-firing and mechanical stokers; and the "H" stoker, the latest type containing several new features. It may be of interest to state

that the orders taken by these two firms during the past year amount to nearly £4,000,000.

In the model boiler house at Birmingham, again, the Paterson Engineering Co. are showing water softening plant for the treatment of boiler feed supply, comprising a lime soda plant with a capacity of 1,500 gallons per hour, together with a model of the by-pass type Osil-ameter measuring and chemical supply gear for the addition of lime and soda ash as installed in connection with large water softening plants of 5,000 to 100,000 gallons per hour capacity. Other exhibits include the Paterson "Basex" base exchange water softener for producing a water of zero hardness, a pressure filter for the purification of sedimentary waters for boiler feed supply and manufacturing purposes and the Paterson Chloronome for the continuous sterilisation of drinking supplies and swimming bath water by the addition of a measured trace of chlorine gas.

Industrial and Commercial Efficiency

THE Committee on Industry and Trade, which issued a "Survey of Overseas Markets" in July, 1925, and followed it up with the publication in April of last year of a "Survey of Industrial Relations," have now undertaken a review of the remaining factors in industrial and commercial efficiency in two volumes, the first of which has just been issued. This useful and comprehensive work, like the previous ones, is not concerned with recommendations, but aims at assembling and analysing facts and tendencies. It deals with factors in efficiency which group themselves roughly under four heads, namely: (1) Factors affecting industrial structure; (2) factors affecting quality of production; (3) factors arising from the relation of the State and the public authorities to industry and trade; and (4) certain aspects of the questions of industrial profits, burdens, and costs.

One way, the Committee point out, in which the size of business tends to increase is by the combination under a single management of a number of independent enterprises. British economic conditions have not hitherto proved nearly so congenial to the growth of consolidations as the United States, and though many notable examples exist, and the subject attracts considerable public attention, consolidations cover but a small proportion of industry as a whole. The distinction between "vertical" and "horizontal" consolidation is explained, and the Committee point out that in this country the former type has become common in the iron and steel trade. The public interest in consolidations relates not only to the need for securing that an adequate share of any reduction in costs is passed on to the consumer and to the employees, but also to the question how far the advantages gained arise from a real increase in productive efficiency and how far from the enforcement of restrictive conditions. The Committee remark that terminable agreements have usually tended to rely for their success more on the enforcement of restrictive conditions and less on the attainment of positive economies than has the consolidation of great businesses. Generally speaking, the Committee consider there are strong grounds for the presumption that the parties directly interested regard combination as an economically effective method of increasing their gains, or at least of defending themselves against cut-throat competition. They point out that in America and Germany combination has made more progress and struck deeper root than in Great Britian, and they show how the latter occupies a position midway between that of the other two countries as regards the attitude of the law and the administrative authorities towards combination.

There are many incidental references in the volume to chemical and allied industries. The heavy branches of the chemical industry, it is stated, are to a very large extent controlled by the United Alkali Co. and Brunner Mond and Co., between whom there has long existed a close working agreement. In the explosives industry there were a number of separate concerns linked together by terminable associations prior to the formation in 1918 of Explosives Trades, Ltd. (subsequently re-named Nobel Industries, Ltd.), which has since dominated the industry. In the autumn of 1926 a provisional agreement was reached for the fusion of the United Alkali Co., Brunner Mond and Co., and Nobel Industries, together with the British Dyestuffs Corporation, which occupies an important position in the manufacture of dyestuffs. An important reason for the fusion is the desire to be in a position to meet the German chemical trust and the American trusts on a footing of equality. Another merger of importance is Borax Consolidated, Ltd., formed in 1899 to unite twelve companies owning factories in England, France, Austria, and the United States, and the chief mines and sources of production of borax.

There are, it is stated, a number of terminable associations in various branches of the chemical industries which include price-fixing among their activities. Salt manufacture provides an example of a terminable association largely dominated by one great firm. The Salt Manufacturers' Association was formed in 1915 and comprises most of the manufacturers in the Cheshire district. The aggregate output of the manufacturers who joined the Association represented, in 1913, 90 per cent. of the total output of the United Kingdom. As the Association has an understanding with the North-Eastern Salt Co., which is a joint selling agency of the manufacturers in the Middlesbrough district, the Salt Manufacturers' Association controls directly or indirectly 95 per cent. of the salt output. Salt Union, Ltd., however, alone produces 60 per cent. of the output, and consequently controls the action of the Association. After inquiry under the Profiteering Acts, it was reported in 1920 that the Association had increased very materially the price of salt, and by abolishing price-cutting had made the trade remunerative to both manufacturers and merchants.

A powerful organisation connected with one aspect of the chemical trade is the Proprietary Articles Trade Association, which controls some 5,000 proprietary articles—drugs, patent medicines, fancy toilet goods, etc.—sold in pharmacists' shops. The Association fixes prices for the manufacturer, for the wholesaler, and for the retailer. Those dealing in the articles concerned sign an agreement to adhere to these prices, and supplies can be withheld from anyone selling at less than the fixed price.

Synthetic Ammonia Progress

SYNTHETIC AMMONIA AND NITRATES, LTD., the British company who in the course of a few years have completely mastered the theory and commercial practice of the fixation of atmospheric nitrogen, are to be congratulated on the further progress made during the past year. The daily output of the present plant has been increased from 50 to 65 tonnes of ammonia (presumably metric tons), and the sulphate plant has been extended to deal with the larger output. The plants for the manufacture of anhydrous liquid ammonia, ammonium nitrate, and sodium nitrite are now, it is reported, commencing operations. The construction of the 165 tonne unit has been delayed by the coal strike, but is expected to be completed towards the end of the present year. The profit for the year, after charging £91,522 for depreciation, amounts to £137,991, and after deducting the debit balance brought forward from last year leaves a sum of £71,410, which it is proposed to carry forward. Mr. Felix Brunner, Mr. P. C. Dickens, Captain A. Hayton Cowap, Mr. Henry Mond, and Dr. R. E. Slade, who have been appointed directors, retire in accordance with the Articles of Association and are recommended for re-election. The directors who retire by rotation are Sir Hugh Bell, Sir John Brunner, Mr. Arthur Colgate, and Mr. A. W. Tangye.

"Letters of an Individualist"

UNDER the title of "The Letters of an Individualist," to *The Times*, 1921 - 1926, Sir Ernest Benn is issuing in book form the articles and letters he has written on the industrial and political questions of the moment during the past five years. By way of introduction, he states that since this is the age of the committee, in which it is generally regarded as improper to express an opinion unsupported by some body or association, we have almost reached the stage when no man may do a piece of work until his union has decided every conceivable condition attaching to the job; and when no business firm may take an order until some association has given a ruling on every detail of the transaction. Dealing with topics as varied as Whitley councils, steel houses, books on economics and the coal dispute, the letters advance throughout a simple plea for the liberty of individual action and its necessity if prosperity is to return to British trade. "The modern habit being to read in snippets," Sir Ernest concludes, "it may be that these letters may suit the reader who prefers small and intermittent doses of those heavy, sound, and voluminous economic doctrines in which our fathers delighted, and on which the greatness of the country and the Empire was built."

Chemistry as a Profession

DR. G. T. MORGAN, presiding at the annual dinner of the British Association of Chemists, made some very interesting remarks as regards registration and other questions which are at present under discussion. He was of opinion that although there are difficulties in the way of registration of chemists, these difficulties were not insuperable. The effect of registration would be to make chemistry a closed profession, and perhaps entry might be restricted to balance the demand. At present, he pointed out, the influx into the profession was greater than the demand, and he made the rather striking point that the fault really lay with our schools. Of scientific subjects, only chemistry, physics and mathematics were taught to children and hence the majority of those of scientific tastes who received higher education became either chemists or physicists. If more zoology and botany were taught in the schools the position would be somewhat altered. Every effort should be made to dissuade students from taking up chemistry unless they really loved the subject, for chemistry, like virtue, was its own reward. Looking back on his own early days, Dr. Morgan thought that there had been a change for the better in the position of the chemist; salaries and prospects were better than they had been. Students were better trained than was the case 30 years ago, but he was of opinion that to train a chemist really took not three years, but nearer seven. On the whole, the present omens were bright, but the profession must be made a little more closed.

The Calendar

Feb. 26	North of England Institute of Mining and Mechanical Engineers: "Winning Thin Seams of Great Britain." W. Leebetter. 3 p.m.	Neville Hall, Newcastle-upon-Tyne.
28	University of Birmingham Chemical Society. Presidential Address: "Some Hetero-cyclic Compounds." Professor W. N. Haworth.	University, Birmingham.
28	Sir John Cass Technical Institute: "Pulverised and Colloidal Fuel." Leonard C. Harvey. 6 p.m.	Jewry Street, Aldgate, London.
28	Society of Chemical Industry. Joint meeting of the Yorkshire Section and the Fuel Section. 2.30 p.m.	Queen's Hotel, Leeds.
1	Institute of Metals (N.E. Coast Section): Annual General Meeting. 7.30 p.m.	Armstrong College, Newcastle-upon-Tyne.
Mar. 1	Hull Chemical and Engineering Society: "Stainless Steel." Dr. W. H. Hatfield. 7.45 p.m.	Grey Street, Park Street, Hull.
2	Royal Society of Arts: "The Corrosion of Metals at Joints and Crevices." Ulick R. Evans. 8 p.m.	John Street, Adelphi, London.
2	Society of Public Analysts. 8 p.m.	Burlington House, Piccadilly, London.
3	Chemical Society: Ordinary Scientific Meeting. 8 p.m.	Burlington House, Piccadilly, London.
3	Staffordshire Iron and Steel Institute, Birmingham Metallurgical Society and the Institute of Metals: "Metal Melting Furnaces." Dr. E. W. Smith. 7 p.m.	Engineers' Club, Waterloo Street, Birmingham.
3	Society of Chemical Industry (Bristol Section): Annual Meeting. Chairman's Address—"Science and Industry." 7.30 p.m.	University, Woodland Road, Bristol.
3	Institution of the Rubber Industry (Birmingham Section): "The Effect of Carbon Dioxide and Antioxidants upon Rubber." Dr. S. S. Pickles.	Grand Hotel, Birmingham.
3	Society of Dyers and Colourists (West Riding Section): "Azoic Colours." Dr. E. B. Higgins.	Bradford.
4	Society of Chemical Industry (Manchester Section): "Chemical Control in the Cotton Bleaching Industry." Dr. D. Clibbens.	16, St. Mary's Parsonage, Manchester.
4	Society of Dyers and Colourists (Scottish Section): "Indigosols on Wool." Messrs. Peterhauser and Wilkinson.	Glasgow.

Modern Machinery Used in Soapmaking

Better Results with Less Labour and Cost

The following notes serve to indicate what is being done by the British plant-maker to simplify and improve common processes in the soap-making industry by the introduction of machinery.

DURING recent years the British soapmaker has been devoting considerable attention to the question of soap cooling. There was a time when no prominent British soapmaker would consider any other method of cooling liquid soap than in the frame, due to the desire to preserve the slightly mottled appearance of the finished bar, to which the housewife was thought to pay particular attention. Conditions are changing, however, and the public have now a much better idea of the essential features of a good soap. A number of soapmakers have already installed cooling machines, and others are considering the installation of them.

Most of the quick cooling machines in use are of the slab type, but there are one or two machines in use producing the bar. Quick cooling of soap has great advantages to the soapmaker: it sets free a considerable amount of very valuable floor space, enables him more quickly to cleanse the soap copper, and lessens the amount of material in stock by reducing the time required for manufacture. There is also a reduction in labour costs and the elimination of the unsightly and messy soap chutes.

A good example of a slab cooling machine, as manufactured by George Scott and Son (London), Ltd., London, is shown

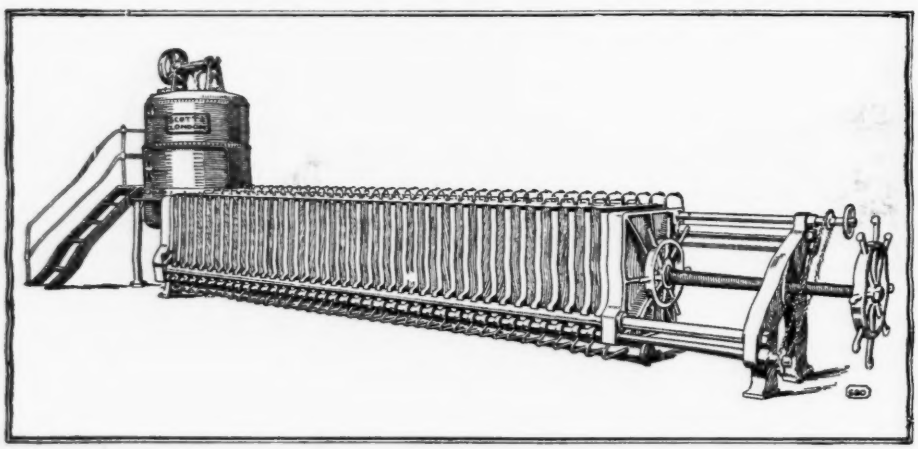


FIG. 1.

in Fig. 1. With this type of machine particular attention is paid to convenience in handling; the machine is opened and closed by electric motor, shown on the travelling trolley. This functions so that during opening the cooling plates—which alternate with the frames containing the slab of soap—are moved to separate all the adjacent faces, thus permitting the frame of soap to be turned over the lower tie bar and pushed on to a low trolley for removal to the cutting tables and stoves. The final squeeze during closing is applied by hand, but this requires very little time. The soap is fed into a mixer autoclave and is delivered by means of air pressure into the frames, thus giving a very compact slab of soap. On these lines it is possible, under average conditions, to deal with a charge of soap in about two hours.

The slab cooler has a very considerable advantage over the framing of soap and is also of advantage in soap works handling a wide variety of tablet or bar, as it is possible to vary the thickness of soap by inserting other frames or by varying the cutting of the slab. Where, however, a factory is handling a considerable proportion of their output in standard sizes of bars or tablets, the "Calderwood" patent soap cooling machine, manufactured by Scotts, presents great advantages. It has all the advantages of the slab cooling machine, but in addition, eliminates the barring and racking of the soap and, in most cases, the stoving. The fact that all four sides of the bar have a natural impervious skin renders it possible immediately to cut the bar into tablets and to stamp and wrap these tablets without any further treatment. The skin gives a very clear-cut impression, while the quick cooling on all four faces of the bar, with the firm texture produced on the surface and its influence on the refraction of light, gives the appearance of a much lighter colour than soap made from the same ingredients and in the same way but cooled in frames. It is also possible to use softer fats and a larger amount of rosin if this is desired. The skin almost completely seals the bar or tablet against loss by evaporation.

Further advantages are that there is no waste by trimming, no loss of weight in stoving, and the fact that cheaper raw materials can be used to produce an equally satisfactory article to that produced in the ordinary manner from more expensive materials.

The machine is illustrated in Fig. 2. This illustrates an electrically-operated machine in the receiving and discharging positions. Fig. 3 shows a hand-operated machine. The machine consists of a number of moulds arranged inside a water-cooled casing and provided at the lower end with plungers for expelling the bars of solidified soap. The machine receives the hot liquid soap in the vertical position, the liquid soap filling the moulds and the shallow tray provided above the top of the mould to make good loss in volume by shrinkage during cooling. Cold water circulates around the outside of the moulds, and just before the machine is discharged the top crust is removed and returned to the waiting vessel. The body of the machine is then turned through 90° and immediately thereafter the plungers are advanced, expelling the bars on to a light wooden trolley on which the bars are removed to the tableting or stamping machine. The machine is returned to the vertical position to receive the next charge. The time of a cycle varies from thirty to sixty minutes, according to the nature of the soap, the temperature of cooling water, etc. The consumption of cooling water is very moderate and it is, of course, possible to pass this on to other duties in the soap-making establishment.

A probable further advantage of the "Calderwood" soap cooling machine is that it is possible to produce bars of other than rectangular cross section. For example, moulds have been prepared for producing oval tablets, and other shapes can be equally well provided for. This may be a very great attraction to a soap-maker who desires to produce a more distinctive article.

The same firm have also recently supplied a number of their newly designed continuous soap chip drying plants. These embody several special features, including the specially designed drying apron formed of a number of hinged panels and carried through the machine on endless chains. These panels are very much more substantial than the light wire weaving or the string weaving chain used. In addition, the air is arranged to be recirculated a number of times through the dryer, thus giving a very high thermal efficiency as well as quick drying. These machines have been supplied to dry down to 12 per cent. of moisture or less, and are of particular interest in connection with the drying of toilet soap base or as a stage in the production of soap flakes. With this type of machine it is possible to dry hot liquid soap straight from the soap copper or from a waiting vessel, or to deal with the bar soap. The soap, before entering the dryer, passes through

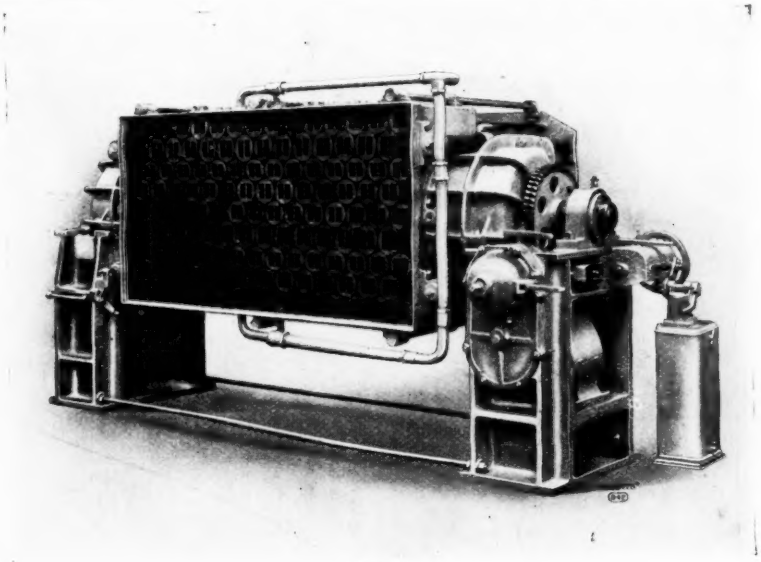


FIG. 2.

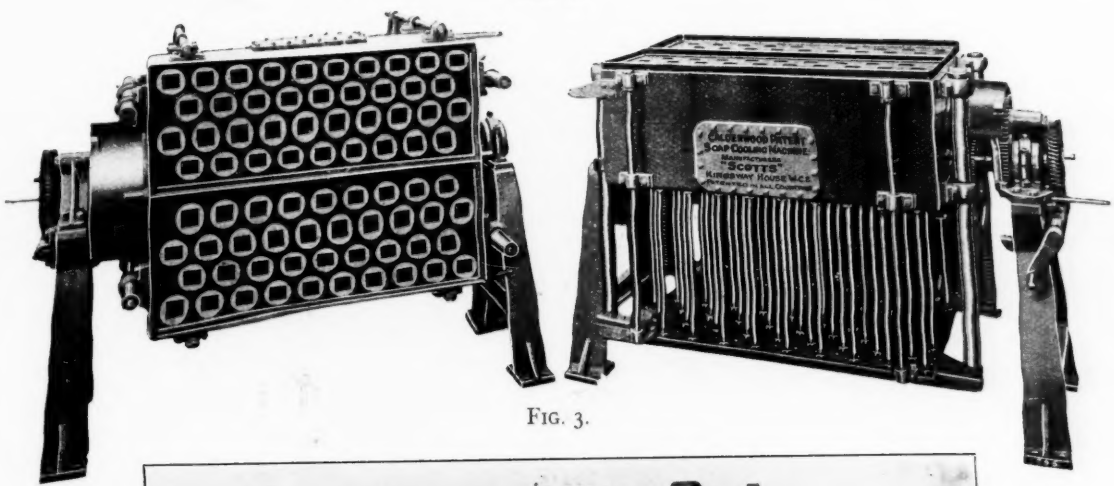


FIG. 3.

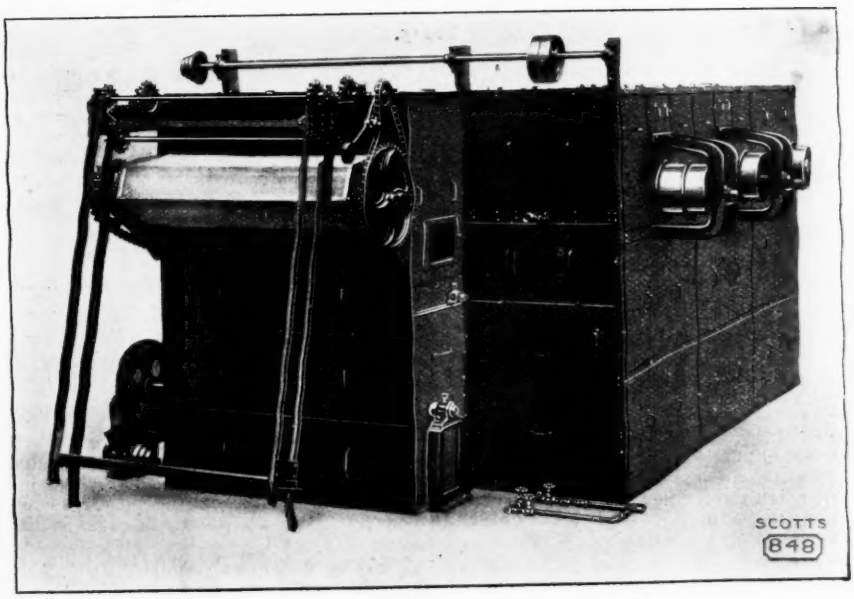


FIG. 4.

a set of powerful flaking rolls from which the cooled soap is delivered in the form of long ribbons of even thickness, especially suitable for obtaining the highest capacity of the actual drying chamber. An illustration is given in Fig. 4, showing the drying chamber proper erected in Scotts' works.

Scotts have also recently introduced a number of improvements in their glycerine recovery plant. They have been increased the natural circulation, provided much deeper vapour separating spaces, larger vapour pipes, a very efficient type of save-all and a double steam jet vacuum creating device, with high efficiency contra-flow jet condensing arrangements. The illustration shows a simple jet condenser with a steam-driven wet displacement type vacuum pump.

Another Scott process which should be of particular interest

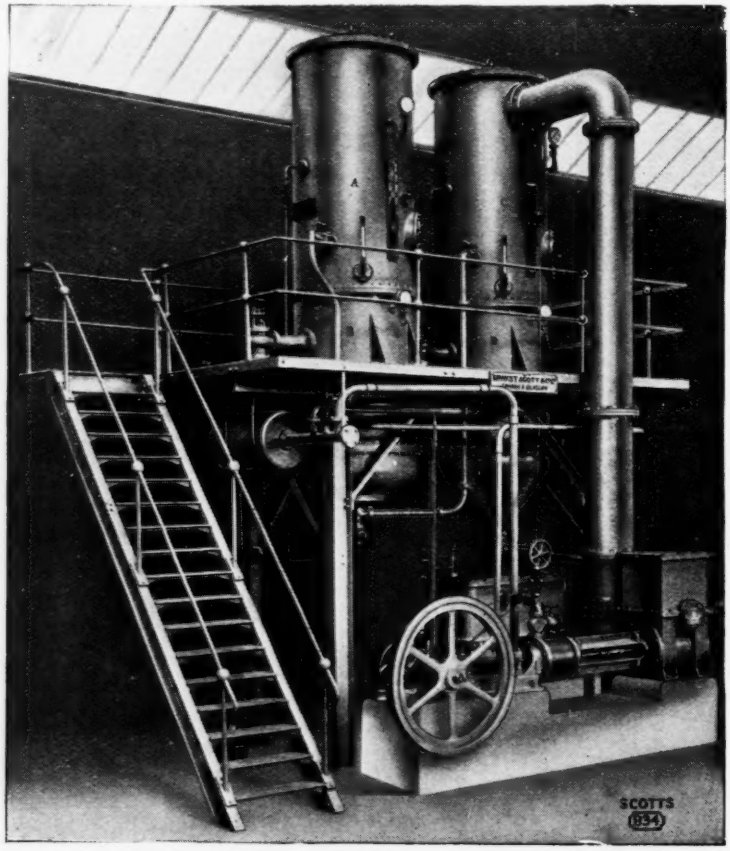


FIG. 5.

manufacturing plant of this character for over thirty-five years and were largely responsible for the introduction of the system of recovery now in almost universal use. There has been a continuous improvement in their designs and they have recently put down a large double effect glycerine evaporating plant for spent soapmakers' lye, embodying a number of unique features. A somewhat smaller double effect plant is shown in Fig. 5. Among other improvements, they have greatly to the larger soapmaker is the production of caustic soda from soda ash and lime, or by electrolysis from salt. At the moment the firm have quite a number of installations in hand for large users of caustic soda in this and other trades. They have supplied several British soapmakers with plant of this character, but it is somewhat surprising that a much larger number of soapmakers have not availed themselves of this method of cheapening their costs.

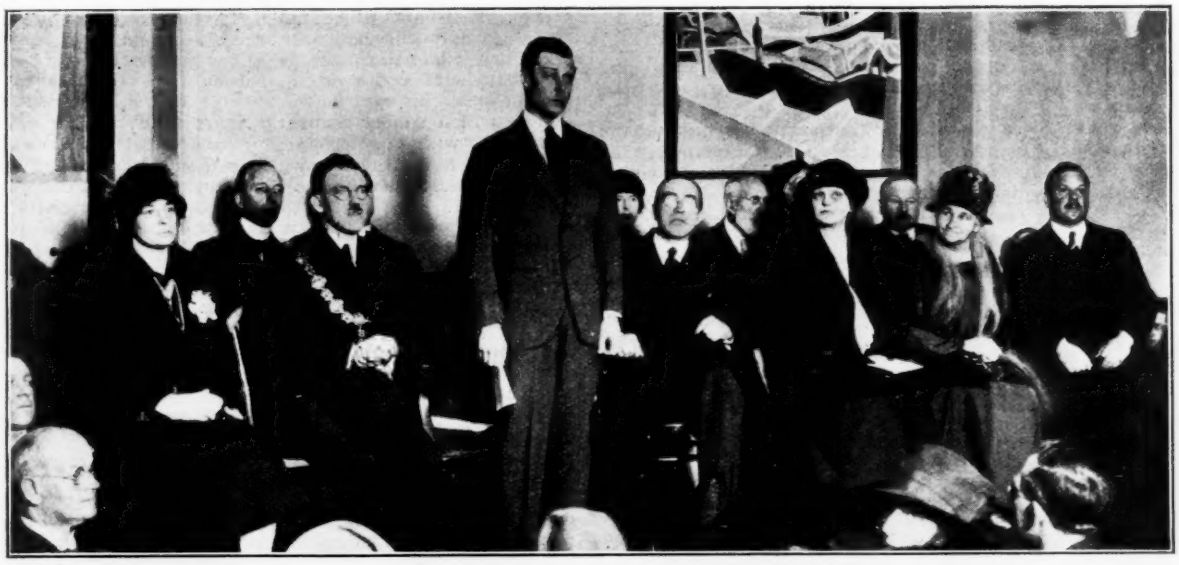
Lime Sales in America

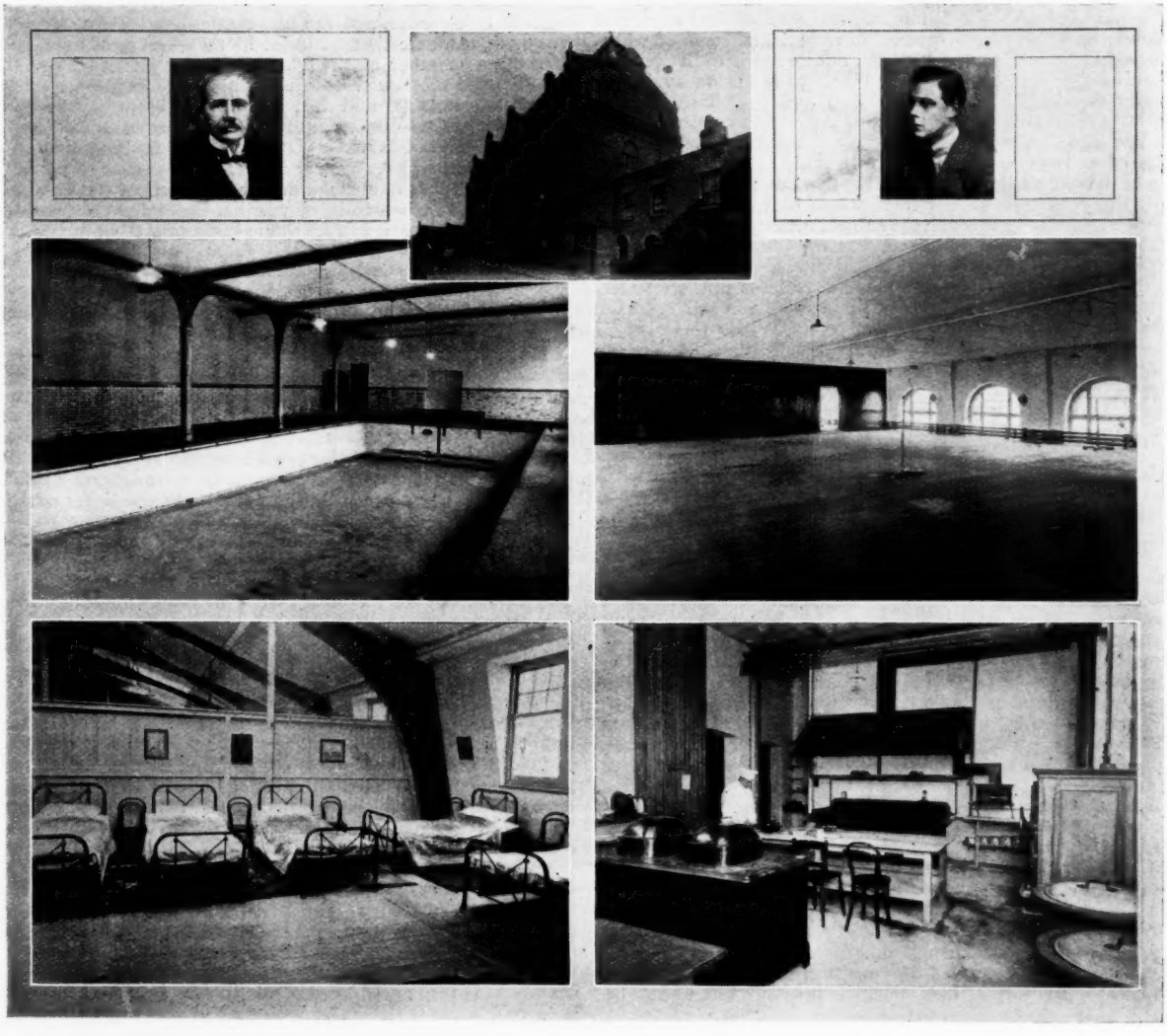
THE lime sold by producers in the United States in 1926 amounted to 4,580,000 short tons, valued at $40,800,000, according to estimates furnished by lime manufacturers. This is approximately the same quantity, but a decrease of 5 per cent. in value as compared with sales in 1924. The sales of hydrated lime, which are included in these figures, amounted to 1,570,000 tons, valued at $14,576,000, a small increase in quantity and a decrease of 5 per cent. in value. The average unit value of all lime showed a decrease from $9.30 a ton in 1925 to $8.91 in 1926, and that of hydrated lime a decrease from $9.79 a ton in 1925 to $9.28 in 1926. Sales of lime for construction and for chemical uses in 1926 were both about the same or possibly slightly less than in 1925, and are estimated at 2,372,000 tons for building lime and 1,893,000 tons for chemical lime. The demand for lime for use in agriculture appeared somewhat better in 1926 than in 1925. The estimated sales for this use are 315,000 tons, an increase of 5 per cent.

Adaptable Runways

SIMPLIFICATION of methods of conveying within factories makes the work much less arduous for the operatives and greatly increases output and speed of despatch, etc. Hubert Morris, Ltd., of Loughborough, have issued a booklet descriptive of a special type of overhead runway for conveying purposes, manufactured by them, and capable of erection by any mechanic. The runway is made up of a few standard parts, which may be coupled together in a great variety of ways. The runway can generally be easily suspended by hangers from supports which occur in ordinary building construction—wood-joists, steel beams, roof-trusses, etc., and the construction can easily be effected without recourse to labour outside the factory. In a number of interesting ways the manner in which the runway facilitates working is shown in the booklet; as, for example, a runway bringing a load to a centrifugal dryer.

The Opening of the John Benn Hostel by The Prince of Wales





The Derby Paper Staining Works

To the Editor of THE CHEMICAL AGE.

SIR,—It has been brought to our notice that a paragraph appeared in your issue of February 19 stating that Nobel Industries, Ltd., had taken control of the above works and that an ambitious programme of increased production was being organised, involving an increase in the premises and additions to the staff.

We would advise you that the above statements are untrue and that Nobel Industries, Ltd., has no capital interest in the above works and does not control them. We would, therefore, ask you to withdraw the notice in question.—Yours, etc.,

For NOBEL INDUSTRIES, LTD.,
H. J. MITCHELL, Director.

Nobel House, Buckingham Gate, S.W.
February 22.

[The paragraph was published from a source which we assumed to be trustworthy. We very readily publish this correction, and regret that the inaccuracy appeared in our columns.—ED., *C.A.*]

Pharmaceutical "Analysts"

To the Editor of THE CHEMICAL AGE.

SIR,—I have read with interest the somewhat controversial correspondence at present running through your columns on Pharmaceutical "Analysts."

Mr. Cofman-Nicoresti is a zealot of the first order, and I think he regards himself as a man with a mission, the mission being to elevate the standard of the pharmacist-shopkeeper, and he spares no effort in trying to do so. Unfortunately, Mr. Nicoresti does not appear to recognise the plain truth when it is told to him, but, armed with a kind of verbal blunderbuss, discharges showers of arguments, some of which prove his experience as a tactician but do not help the genuine issue one iota. It is always difficult to argue on averages; really there is no such thing as an average pharmacist, as there is no such thing as an average man—no two people being alike—but in all professions there are a few men who can be classed as leaders, a few who are frankly incompetent, and a great bulk at all stages between the two extremes. And while Mr. Nicoresti may shower forth whole biographies of famous leaders, this does not touch the subject under discussion.

The question was, I believe, "Is the pharmacist the most suitable person to undertake chemical analyses?" and some people have expressed the opinion that he is not, while Mr. Nicoresti thinks he is. In other words, are the ordinary pharmaceutical chemists the best persons to do this class of work—not the few leaders and not the few boobies but the vast majority. The question is not one of *inferiority*—no one denies that the pharmacist, if properly trained and experienced, could undertake this class of work, but the question has to do with *suitability* of the pharmacist, and although we all have our moments of exasperation, I believe even those who have written so pointedly to Mr. Nicoresti, would withdraw some of their criticisms of pharmacists as a body, even though they may still have their own opinion regarding his personal mental processes.

As for the rest of us, well, I think we all look upon the pharmaceutical chemist as a man possessing considerable skill in the dispensing of medicines, accepting a good deal of responsibility in complying with the Poisons Act, while most of us have to make use of his good offices from time to time in supplying small quantities of chemicals when we are mildly amused at the dog Latin that decorates our apparently simple purchases. At any rate, let me assure Mr. Nicoresti that there is no question of *inferiority* as far as I am concerned—a sentiment which I hope will stay the bludgeon he is doubtless already lifting—even though I do not agree with him.

I think there is little doubt that the pharmaceutical chemist (or chymist as he used to be called), has fallen from grace during these late years, and whether Mr. Nicoresti likes it or not, there is, in my opinion, a tendency towards more shopkeeping and less compounding among pharmacists. There is no need for me to labour this point—a glance at the trade papers of the profession will show its present state quite clearly. My grandfather was a chemist in a remote part of the country, and not only compounded his own medicines, but in a good many cases prescribed (there being no doctor); but to-day he would probably have joined the general movement and bought his drugs and medicaments from the wholesale suppliers, this being the easier and cheaper method of obtaining a standard article. Reference to the advertisement columns of the trade journals will show just where he could have bought them, and if he had a taste for selling popular lines he could have bought his cod liver oil emulsion, for example, already packed under his own name, together with a blood purifier done up in a similar manner. Apart from this the great advertisers with their proprietary lines would have stocked his shop for him with goods which were in public demand and which he would have had to keep and to sell, but certainly not to make. This applies to the ordinary pharmacist who keeps a shop and who is put forward as the right man to perform chemical analyses when there are so many expert analysts available—men who are devoting the whole of their time to analytical work.

With regard to the "mushroom" Institute of Chemistry, this is surely old-fashioned, and Mr. Nicoresti is putting himself behind the times when he descends to that form of abuse. Possibly the Society of Apothecaries held similar opinions when the Pharmaceutical Society was formed, while no doubt the Alchemists, who are the forefathers of us all, had very strong opinions regarding those who had split away.

Let Mr. Nicoresti consider. Once upon a time the apothecaries attended patients—an action which was upheld in one instance by the House of Lords; to-day membership of the Society of Apothecaries as a sole qualification would not sanction the signing of a death certificate, nor does it carry with it automatic membership to the College of Physicians.

Only a few years ago the pharmacist extracted teeth with the aid of an anæsthetic, but let him dare to do it now (even if he is a member of the Pharmaceutical Society), and the penalties of the law will be upon him in a very short time. No, times change, and Mr. Nicoresti is living in the past. The pharmacist is becoming more and more of a shopkeeper in the main and less and less of a compounder, manufacturer, or prescriber, so that even if he were encouraged to do work of this kind, it is doubtful whether his manifold duties would allow him to attend to it, or whether the volume of work he received would be worth his while keeping a laboratory for it alone.

At the same time, those branches of the profession which specialise in analysis have developed in ways too well known to need comment. Who then should be chosen for the work—the pharmacist or the specialist?

In conclusion I cannot resist pointing out to Mr. Nicoresti that one of the leaders of his branch of the profession, a man for whom I have the greatest respect (I refer to W. Harrison Martindale, Ph.Ch., Ph.D., F.C.S.), does not disdain to use the degrees and titles which he has so justly earned. He is not a peacock displaying a shining tail, but he uses them in the frontispiece of his books as a means of showing the public some qualification of his right to speak. As the latter part of Mr. Nicoresti's letter struck me as being most unfair, he will forgive me if I point out that among all these titles, Dr. Martindale does not claim membership of the Pharmaceutical Society, and I can only advise Mr. Nicoresti to gratify his literary tastes with the observation in Hamlet relating to the existence of other bodies than are sometimes dreamt of in a limited philosophy.—Yours, etc. OBSERVATOR.

To the Editor of THE CHEMICAL AGE.

SIR,—From his communication, I have not the slightest doubt that an alphabet of the type to which Mr. Carol A. Cofman-Nicoresti refers conveys nothing to him, but in the scientific world, the said alphabet is known, understood, and valued as representing certain definite contributions to science. The researches for which doctorate degrees in chemistry are conferred by the Senates of our Universities can be found by your correspondent in the *Journal of the Chemical Society* and the Transactions of similar learned bodies. The value of an alphabet of letters to one's name depends on the nature of that alphabet, and we cannot expect the "Man in the Street" to realise the vast gulf between a D.Sc. or Ph.D. and an M.R.C.S., L.R.C.P. Moreover, it is illuminating to note that qualified chemists (as recognised by the Institute of Chemistry and the

Scientific Faculties of our Universities) have never tried, and indeed, are never likely to try, to call themselves "Pharmacists," although curiously enough, every M.P.S. must, apparently, try to style himself a "Chemist." That is all.—I am, etc.,

R. F. HUNTER, M.Sc., Ph.D. (Lond.), D.I.C., A.R.C.S., etc.

To the Editor of THE CHEMICAL AGE.

SIR,—Regarding the recent discussion concerning pharmacists and analysts, I am—to use a paradoxical expression—glad yet sorry, to see that Mr. Cofman-Nicoresti has battled for us so well. Glad because he has entered the lists with his thick armour, his piercing gibes, and lance-like thrusts of witticism, yet sorry because he is only one among many. Where are the R.P.U. and the P.A.T.A. and the Pharmaceutical Society? They are all wholly chemists' gatherings. It would be well if his letter could be published and distributed among pharmacists in some cheap pamphlet form. I wonder if it would have any effect among the 18,000 or so registered people?—Yours, etc., J. A.

"Four Research Chemists" of the Royal College of Science, South Kensington, also write strongly protesting against the confusion of the trade of pharmacy with the science of chemistry.

[We think that nothing would be gained by the continuance of this correspondence.—ED., *C.A.*]

The Lignite Problem

SEVERAL methods of approach to the problem of the successful utilisation of lignite are possible, states the U.S.A. Bureau of Mines. Any process whereby lignite can be profitably converted into more valuable and saleable products will help to develop this latent source of energy. Accordingly an investigator might well study any of the following phases of the lignite problem: a cheap means for completely gasifying lignite, including an improved method of making producer gas and a suitable method for making water gas; a means for producing a solid fuel other than by briquetting the carbonised lignite; the possibility of developing a means of coking lignite; the commercial applicability of the carbonising and briquetting process and its relation to by-products and methods for plant control; a method for producing valuable crude liquid products by the distillation of lignite, with attention to the influence of changes in conditions, such as pressure, temperature, and rate of heating, on the character, quantity, and quality of the resulting products; the possibility of hydrogenating or otherwise preparing liquid or soluble products direct from lignite. Each of these studies offers a promising field, but only the carbonising and briquetting process holds positive assurance that the experiments will end with a satisfactory solid domestic fuel. Some of these problems when solved would be more or less of local interest and not generally applicable to the large lignite deposits in different parts of the United States.

Purification of Industrial Waters

THE Paterson Engineering Co., London, have just issued a new handbook entitled *The Purification of Industrial Waters*, the fifth edition of the well-known "Paterson Red Book." The matter is clearly written in language which makes its pages easily understood by non-technical readers. It deals with the various impurities usually found in natural waters, and the methods of treatment whereby such waters can be made suitable for boiler feed, locomotive, and other general works and industrial purposes. The various methods of purification—rapid filtration, hot and cold process softening, base exchange softening, oil elimination, and chlorination—are all described and illustrations are given of numerous plants which have been installed for the various purposes. In this new edition a helpful appendix is included for the first time, in which tables appear giving sizes and leading dimensions, weights, etc., of all standard types of plant, accompanied with coloured diagrams. The book gives a mass of interesting information which should be of practical use to every works director, engineer, and chemist. A copy will be sent, post free, to all interested inquirers.

Marriage of Mr. Philip Mond

THE marriage took place on Tuesday, at St. George's, London, of Mr. Philip Mond, a director of the Mond Nickel Co., Ltd., and Henry Wiggin and Co., Ltd., eldest surviving son of the deputy Chairman of the Mond Nickel Co., Mr. Emile Mond, and Mrs. Mond, of London, and Miss Elizabeth Derenburg, younger daughter of Mr. and Mrs. Carl Derenburg, of 28, Hyde Park Square. Prebendary Thicknesse officiated. The hymns sung in the choral service were "Lead us, Heavenly Father," "O Perfect Love," and "God be in my Head." While the register was being signed, the anthem "My Heart Ever Faithful" (Bach) was given, and at the close of the service Mendelssohn's Wedding March was played.

MR. PHILIP MOND.

The bride, who was given away by her father, wore an ivory-white dress of "ring" velvet. The bodice was embroidered with a Florentine design of silver, and there was a pearl girdle and an epaulette and trail of orange blossoms on one shoulder. The train, of similar velvet, was edged with silver embroidery. The tulle veil fell from a wreath of orange blossoms, and a white-bound Prayer Book was carried. There were two little girl bridesmaids, the Hon. Elizabeth Rufus Isaacs and Miss Nicola Madan, and two grown-up attendants, Miss R. Derenburg and Miss Mond. Their dresses were of mollis azalea-coloured taffeta embroidered in silver, with short full skirt drapery. Their head-dresses rose in semi-circular pleats of tulle of a red-brown shade from cap-shaped bandeaux of oxidised silver. The little girls wore tulle caps instead of these more elaborate head-dresses. The elder girls carried bouquets of tulips in shades of maize to flame mingled with orchid spikes in similar colour. The children carried little baskets of similar flowers and mignonette. The best man was Captain Easton Dudgeon, and after the wedding Mrs. Derenburg held a reception at 22, Hyde Park Square (lent by Mrs. Emile Mond). Among those present were:—Mr. and Mrs. Emile Mond, Sir Alfred and Lady Mond, Mr. and Mrs. Henry Mond, Viscountess Erleigh, Mr. and Mrs. Alfred Mond, the Earl of Oxford and Asquith, with Princess Antoine Bibesco and the Hon. Anthony Asquith, Lady Mildmay of Flete and the Hon. Helen Mildmay, Lady Stanley of Alderley, Lady Sheffield, the Swedish Minister and Baroness Palmstierna, the Estonian Minister and Mme. Kallas, Mr. and the Hon. Mrs. Harold Myers, the Hon. Mrs. Anthony Henley and Miss Kitty Henley, the Hon. Eve Chetwynd, the Dowager Lady Boyle, Lady Henschel, Lady Morant and Miss Morant, Lady Brunner, with Mrs. Felix Brunner, Lady Ronald, Lady (Denison) Ross, Mrs. Charles Hunter, Mr. and Mrs. John Buckland, Mrs. Frank Dawes, Mrs. Frederick Balfour and Miss Balfour, Mr. and Mrs. Cecil Harmsworth, Mrs. Kinnell, Mr. Chetham Strode, Mrs. Herbert Lonsdale, Mrs. Geoffrey Madan, and Mrs. Ernest Raphael.

The honeymoon is being spent in the United States.

Chemicals at the British Industries Fair

A Striking Range of Products

In the 1927 British Industries Fair, which is as usual divided into two sections, in London and Birmingham, the exhibits illustrative of chemical industry are housed in Hall A of the White City, Shepherds Bush, London. The exhibition as a whole was opened on Monday, and will remain open until

The Manufacture and Use of a Dyestuff, shown by British Dyestuffs Corporation, Ltd.

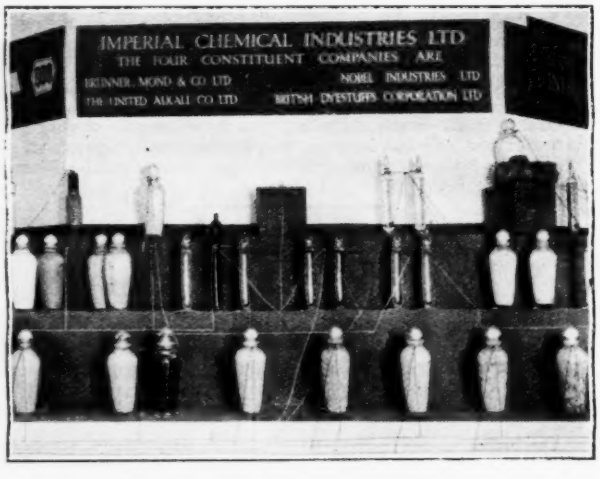
Friday, March 4. The Association of British Chemical Manufacturers has again made itself responsible for the organisation of this exhibit, and a number of new and interesting products are on view. The exhibitors in the chemical section are the following: The Acme Chemical Co., Ltd.; Albright and Wilson, Ltd.; Frederick Allen and Sons (Poplar), Ltd.; A. Boake, Roberts and Co., Ltd.; Boots Pure Drug Co., Ltd.; The British Drug Houses, Ltd.; W. J. Bush and Co., Ltd.; Joseph Crosfield and Sons, Ltd.; The Erasmic Co., Ltd.; The Gas Light and Coke Co.; The Graesser-Monsanto Chemical Works, Ltd.; Hopkin and Williams, Ltd.; Howards and Sons, Ltd.; Imperial Chemical Industries, Ltd.; Johnson and Sons (Manufacturing Chemists), Ltd.; May and Baker, Ltd.; Thomas Morson and Son, Ltd.; Salt Union, Ltd.; The South Metropolitan Gas Co.; Thomas Tyrer and Co., Ltd.; Whiffen and Sons, Ltd.; and Williams (Hounslow), Ltd.

This year's fair is signalised by the fact that Imperial Chemical Industries, Ltd., is, for the first time since its foundation, occupying a single stand illustrative of the activities of the organisation as a whole, whereas on previous occasions the four constituent members, i.e., Brunner, Mond, and Co., Ltd., The United Alkali Co., Ltd., Nobel Industries, Ltd., and The British Dyestuffs Corporation, Ltd., have exhibited separately. The I.C.I. stand was the central exhibit of the chemical branch, and was arranged so as to show the remarkable diversity of the activities of the great combine. The exhibit will be described in detail, together with the others, below.

While the exhibits contain none of the "new and wonderful inventions" beloved of the lay Press, they offer evidence that the position of British chemical industry is being steadily consolidated; and certain tendencies which have been showing themselves in earlier years now appear in a much clearer light. Perhaps the most striking sign of the times is the manner in which the cellulose lacquer industry is demanding attention. In this country this industry is yet young, but it has already created a large and growing demand for solvents of a great range of properties. It is satisfactory to find that a large number of British manufacturers have turned their attention to the production of these solvents, a great variety of which are on view at several of the stands, where plasticisers and other products for the same purpose are also to be seen. There is no doubt that the use of these lacquers is revolutionising the paint and varnish trades. In spite of the huge volume of chemical products already used for the purpose, it is quite certain that the demand must expand very rapidly for a number of years to come. Like most young industries, this industry will probably show changing needs as new and improved products come on to the market; but the manufacturers who have entered the field at this early stage, and who have organised research on generous lines, are likely to reap, in the near future, very large rewards for their enterprise. The growth of the motor industry alone provides them with a solid insurance, and this is, after all, only one source of demand.

The growth of the modern chemical fertiliser industry is reflected in the increasing attention paid to it at the Fair. The production of ammonia from atmospheric nitrogen is now assured, and it is believed that advances have been made in the production of urea, although no information has so far been made public on this latter subject. At the moment attention seems to be specially turned in two directions. Firstly, there is the question of the production of complete fertilisers for various purposes. Apart from the exhibit of Nitram, Ltd., at the stand of I.C.I., various other manufacturers also are taking up the production of mixed fertilisers for application to special crops. The second point to which attention is being paid is the improvement of the methods of using land. This latter point may seem somewhat remote from chemistry, but if the fertiliser manufacturers are to obtain the greatest possible demand for their products they will have to consider the problems of agriculture from the point of view of the farmer. I.C.I., for example, a short time ago appointed Sir Frederic Keeble, formerly a professor in the University of Oxford, to deal with the biological side of the use of fertilisers.

It does, in fact, seem that the growth of the synthetic fertiliser industry in this country (as has been the case with other new industries) is going to have an unexpected by-product, in the shape of a great intensification in agricultural research. To a considerable extent this research, at any rate for the next few years, is likely to be conducted by the great fertiliser manufacturers themselves. This exemplifies very clearly one of the most remarkable aspects of modern industry. Incidentally, it is likely to be of great importance to the chemist, as distinct from the chemical manufacturer.


IMPERIAL CHEMICAL INDUSTRIES LTD
THE FOUR CONSTITUENT COMPANIES ARE
BRUNNER, MOND & CO LTD
NOBEL INDUSTRIES LTD
THE UNITED ALKALI CO LTD
BRITISH DYESTUFFS CORPORATION LTD

Part of a Display of Heavy Chemicals arranged by Brunner, Mond and Co., Ltd., and the United Alkali Co., Ltd.

The chemical profession has been faced in the last few years with the fact that the supply of chemists is exceeding the demand. At the recent annual dinner of the London Section of the British Association of Chemists, Dr. G. T. Morgan, of the Teddington Chemical Laboratory, expressed the opinion that the schools of the country could improve matters by a

larger amount of teaching in biology, so that children who afterwards passed on to the universities might be inclined to take up the biological sciences, thereby possibly cutting down the number whose prime interest was chemistry. It is certain that a great expansion of agricultural research, and a consequent demand for agricultural chemists, will occur in the next few years. Bio-chemists and chemical biologists who have been trained in agricultural methods will find their services at a premium, and those chemists who deflect some of their

A Display of Nobel Industries' Products on the Stand of Imperial Chemical Industries, Ltd.

attention to biology and agriculture will be taking a step of great economic importance to themselves and to the country. It is to be hoped that such developments as those outlined above, together with the increasing demand for chemists which must accompany the growth of the beet sugar industry and the artificial silk and allied industries, will, for the next few years, prevent the chemical market from becoming overstocked.

It is evident from the exhibits at the Fair that great activity prevails among the manufacturers of natural and synthetic drugs. It was only very recently that Harington and Barger announced their successful synthesis of thyroxin: it is therefore very gratifying to find that already the preparation of this substance on the manufacturing scale has been accomplished. At one of the stands was an exhibit showing the complete synthesis, together with samples of all the intermediate products. In notes on last year's Fair THE CHEMICAL AGE commented on the rapidity with which research results were elaborated on the works scale, and the present instance illustrates this fact in a peculiarly striking way. There is also evidence that a number of synthetic drugs previously obtainable only abroad are being manufactured in this country.

Notes on the Exhibits

In what follows an account is given of the products shown by the various chemical exhibitors at the British Industries Fair.

Imperial Chemical Industries

The central stand of the section is that of Imperial Chemical Industries, Ltd. The products of each of the four companies in the merger are allotted separate sections on the stand, while perhaps the most informative of all is the section which demonstrates the co-relationship and interlinking of the various products and processes of all four constituent firms. This is done by an ingenious arrangment of models and raw materials, with lines of coloured wire directing the eye through a range of processes and intermediate products down to the last and final product of all. Even the layman can thus glean an idea of how the various manufactures of the combine are linked up and of how the explosives and dyestuffs draw their materials from the heavy chemicals section, which in turn goes back to the raw materials found in nature. On the top shelf of the stand are five raw materials, air, pyrites or sulphur, coal, brine, and limestone. From these the coloured wires run down through different intermediate products to the manufactured explosive or the finished dyestuff on the bottom shelf. To even the casual observer this gives a fairly adequate idea of how closely the work of the modern chemist enters into the daily needs and doings of each and every one of us.

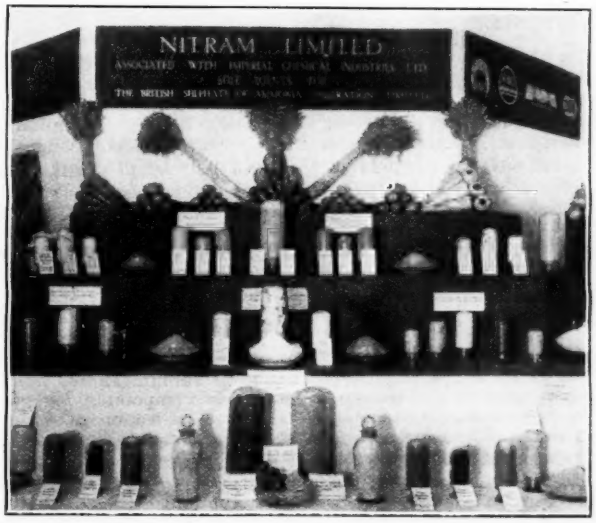
The section of the stand occupied by the British Dyestuffs Corporation shows a working demonstration of the production and application of the dyestuff known as Acid Orange G. Diazotised sulphanilic acid is shown running into alkaline β-naphthol solution, the resultant azo-dye being then precipitated by addition of salt, and the precipitated dyestuff filtered. The actual process of dyeing with the finished dyestuff is illustrated by a working model of a dyeing machine, in which a fabric passes through a solution of the dye and emerges dyed to the proper shade. The section of the stand occupied by Nobel Industries, Ltd., shows not only a symposium of the modern explosives industry, but also a wide variety of products derived from nitrocotton—*e.g.*, celluloid; artificial leather; gas mantles; paints, lacquers, and varnishes, etc.

Nitram, Ltd., is also represented at the stand. This company acts as selling agent for fertilisers produced by the British Sulphate of Ammonia Corporation, Synthetic Ammonia and Nitrates, Ltd., and the Sociedad Anonima Azamon. The display shows fertilisers and products of all kinds for agricultural and horticultural purposes; wheat manures, turnip manures, and other complete fertilisers; lime; weed-killer mixtures, and so forth. There is also shown a model of a new system of grassland management, by which, it is claimed, three cows can be kept on an area which now supports only one.

The furnishing and decoration of the interior of the stand has been carried out in products which are either directly prepared by I.C.I. or have I.C.I. products incorporated in them in the course of manufacture.

Fine Chemicals, Drugs, etc.

The most striking feature of the display organised by the British Drug Houses, Ltd., is a chart showing the stages of the technical production of synthetic thyroxin. It is only a few months since this substance—a gland-extract of great



A Display of Chemical Fertilisers made by Associated Companies of Imperial Chemical Industries, Ltd.

therapeutic importance—was first synthesised by Harington and Barger, and already its production on the manufacturing scale has been achieved. The chart on the B.D.H. stand shows each step in the synthesis, and samples of all the products, intermediate and final, are shown. Among other products of special interest are ephedrine, a new drug of plant origin; insulin, borocaine and β-borocaine, new local anæs-

thetics; and cholesterol, which the company supplies in a pure crystalline condition, and which is at present the subject of much research in various laboratories. In addition the company is showing a selection of the enormous number of fine chemicals, analytical reagents, and other substances which it manufactures.

May and Baker, Ltd., are showing a very large number of synthetic drugs, medical preparations, fine and technical chemicals, etc. A very interesting display is made of arsenic and bismuth derivatives used in the treatment of syphilis and tropical diseases, including arsenobillon (606), novarsenobillon (914), tryparsamide, stovarsol, bistovol, bisglucol, and luatol. Other interesting therapeutic substances include hypnotics such as soneryl (butylethylmalonylurea) and gardenal. Further exhibits include many other therapeutic and pharmaceutical substances, and also many mercury derivatives (such as the red and yellow oxides and corrosive sublimate) used in industry. A special point is made of showing technical products in bulk, in order to convey an impression of the manner in which they usually appear in industry.

A complete range of photographic chemicals is being shown by Johnson and Sons (Manufacturing Chemists), Ltd., who specialise in this direction. In addition their stand contains specimens of their pharmaceutical products and general chemicals for laboratory and technical use.

The stand illustrative of the activities of Boots Pure Drug Co., Ltd., shows a wide range of fine research and pharmaceutical synthetic chemicals, including saccharin, acriflavine and its preparations, chloroform, hydroxylamine. Among the many substances for the use of the medical profession are insulin, hexyl resorcinol, and aspirin; while various sterile solutions are also on view. There are also a wide selection of tablets, pills, and lozenges.

The exhibit of Whiffen and Sons, Ltd., consists of pharmaceutical and technical fine chemicals. Among the items of outstanding interest are specimens of halides, viz., iodide and bromide preparations, present in comprehensive array and forming one of the staple products of the firm, in which they have specialised for upwards of a century. There is also vermilion in all shades, pale orange to deep red. Some of the specimens to be shown have been exposed to light for more than fifty years without deterioration. Among other specimens may be noticed caffeine in unbroken acicular crystals, and emetine and the principal salts, standard preparations for hypodermic administration.

Rare Earths

Hopkin and Williams, Ltd., are showing their chemical reagents for analytical and research purposes, prepared to specifications in their book, "Analytical Reagents, Standards, and Tests." Among the exhibits are many organic chemicals, both rare and common, including a number of organic sulphides and mercaptans. There are also indicators used for p_H determination. They specialise in the preparation of uranium salts. The company has also a branch established in Travancore, which exploits monazite sand and the accompanying substances, ilmenite and zircon. Monazite sand products are dealt with by their associated company, Thorium, Ltd., at Ilford, who are showing a full range of thorium and the allied rare earth salts, used in the incandescent mantle trade. A by-product in the treatment of monazite sand is mesothorium, which closely resembles radium and is much used in the preparation of luminous compounds for gun sights, compass and watch dials, etc. A collection of cerium, lanthanum, neodymium and praseodymium salts are also on view. An interesting development is the use of ilmenite, which accompanies monazite in the sand deposits, as a source of white titanium pigment, which is now widely used in the manufacture of paint. Another mineral accompanying ilmenite is zircon; this is a source of zirconium oxide, used in the preparation of refractory furnace linings.

Colloidal Powders

The exhibit of Thomas Morson and Son, Ltd., consists chiefly of a demonstration of colloidal powders by means of special apparatus designed to show clearly the very fine character of the individual particles of Osmo-kaolin "Morson" and bismuth carbonate "Morson." By means of a "powder fountain" a fine spray of the material is thrown up inside a glass-sided case. The fountain is illuminated by powerful beams of light, and after a while the interior of the case is filled with a "powder fog." The movement of the particles of colloidal powder is thus seen clearly by the Faraday-Tyndall effect, and the extremely fine condition of the powder may be readily appreciated. Such finely divided matter possesses the property of increased physical and chemical activity, and therein lies the value of the medicinal action and applications in technical operations. Aerosols, or finely divided matter dispersed in a gas, are closely similar to the corresponding hydrosols, or colloids formed as a result of the disperse systems of sols in water. In recent years it has been shown that the normal characteristics of a substance are profoundly altered when it is reduced to a finely divided state. This is due to the large specific surface which renders the substance more directly available for intimate activity. In addition to the above exhibit the stand shows a large number of pharmaceutical products, fine and technical chemicals, cadmium colours, etc.

Essences, Perfumes, etc.

W. J. Bush and Co., Ltd.'s exhibit may be divided into two main groups: first, that consisting of essences, essential oils and perfumes; and, second, fine chemicals and cream of tartar. This firm is showing some of its leading specialities, for example, essential oil of lemon, produced at its Messina and Californian factories; peppermint, distilled at the Mitcham factory; and various fruit essences. Prominent among fine chemicals is vanillin, of which this company is the oldest British maker. Coumarin, thymol, ionone and many others are also exhibited. Certain important intermediates for dye manufacturers are shown, prominent among which are salicylic acid, acetoacetic ester, sulphanilic acid, and benzoyl chloride. Among synthetic drugs are salicylic acid, sodium salicylate, acetanilide and methyl salicylate. The comparatively new industry of nitro-cellulose varnishes and polishes is being catered for in the production of a range of solvents of which ethyl, butyl and amyl acetates, and various lactates and propionates are important examples; and plasticisers are also exhibited. There are also samples of mono-, di-, and tri- acetin.

Solvents

Howards and Sons, Ltd., are showing their new solvents: cyclohexanol (Sextol) for making textile, laundry and household soaps, and solvent soaps for dry cleaning, etc.; cyclohexanone (Sextone), "medium boiler" type of solvent for pyroxylin lacquers, a good solvent for gums and resins; cyclohexanol acetate (Sextate), a high boiler type of solvent for pyroxylin lacquers, and also solvent for rubber, etc.; and diacetone alcohol, one of the best "two-type" high boiler lacquer solvents. This firm is also exhibiting samples of its famous quinine products, which include, in addition to ordinary quinine salts, such things as optochin (ethylhydrocupreine) hydrochloride. Other therapeutic products shown are aspirin, agotan (phenylcinchoninic acid), etc. There are also hydrogen peroxide, thymol and menthol, and all the usual range of drugs and chemicals.

A. Boake, Roberts and Co., Ltd., show a complete range of solvents, plasticisers and artificial resins required for the production of cellulose lacquers. The most recent products of the firm in this class of chemicals are as follows: diacetone alcohol (cellulose lacquer solvent, b.p. 164° C.); diamyl phthalate (cellulose lacquer plasticiser); and pale glycerin resin ester. The company supplies cellulose acetate manufactured by the Apex Artificial Silk Co. Perfumes, essences, and fine chemicals are also shown, including 100 per cent. heliotropine, cineol, safrol, citronellol, and synthetic menthol; as well as chromium derivatives for chrome tanning.

General Chemicals

The firm of Frederick Allen and Sons (Poplar), Ltd., is presenting a wide range of A.R. chemicals for analysis and research. In addition they show chemicals for rubber making, tanning, textiles, bleaching, paper making, etc., as well as a group of insecticides, fertilisers, and agricultural chemicals.

Thomas Tyrer and Co., Ltd., show a large range of Stirling brand chemicals for research and analysis, as well as many technical and pharmaceutical chemicals. An interesting

exhibit is nickel formate, formerly made only in America, which is used in large quantities for the hydrogenation of oils, while other items deserving of note are cobalt compounds (used as siccatives for paint, varnish and linoleum) and bismuth salts, of which a large range are on view. This company now puts up its reagents in very convenient bottles, in which a glass cap is ground to fit over the neck. This ensures cleanliness and other advantages.

The display of the Graesser-Monsanto Chemical Works, Ltd., includes pure phenol (40° to 41° C.); pure cresols; cresylic acids; salicylic acid; and derivatives of these, as well as vanillin-Monsanto and saccharin-Monsanto.

Dyes and Colours

The exhibit of the British Dyestuffs Corporation is noted above, under the heading of Imperial Chemical Industries, Ltd.

Williams (Hounslow), Ltd., are showing a full range of their dyestuffs in crystal and powder, for application to leather, polishes, inks, nitrocellulose lacquers, fabrics of all kinds; and articles showing the application of the dyes are also shown. Particular prominence is given to their nigrosines and indulines. A special section is devoted to harmless colours for foodstuffs, which are supplied in a degree of purity conforming with the laws of all the principal countries of the world.

Gas and Tar Products

The Gas Light and Coke Co. have a revolving stand showing very effectively a wide range of tar, ammonia and cyanogen products, including coal tar pitch, creosote, road tar, benzol products, such as motor spirit, pure toluene, solvents, high-flash naphtha, xylenes, phenol, cresol, naphthalene, beta-naphthol, salicylic acid, bleaching powder, sulphate of ammonia (neutral quality), liquid and anhydrous ammonia, Prussian blues for ink- and papermaking and paints, etc.

"The Sign of the Benzene Ring," a replica of an old country inn, houses the products of the South Metropolitan Gas Co., including sulphate of ammonia, road tar, creosote, disinfectant fluid, black varnish, motor benzol and many coal tar, ammonia, and inorganic products. The hexagon is incorporated in the whole design of the stand, to symbolise the importance of benzene, naphthalene and anthracene.

Silicon Ester

The value of silicon ester treatment as a means of preserving stone is now well known, and Albright and Wilson, Ltd., show a large variety of architectural stoneware which has been successfully treated by this method. In a number of cases broken mouldings are shown restored, with excellent results. A sandstone wall is shown, built without mortar, only sand and silicon ester being used. The ester also has important new application in terra-cotta work, while a very recent development is the production of pictures prepared by the use of silicon ester paints, containing no oil or water colours. These may be used on paper, stone, wood, etc., and may be exposed to outdoor agencies, water and so forth, without suffering ill-effects. Another exhibit was a carbon tetrachloride actinometer for the detection and measurement of ultra-violet radiation, which should have considerable application in the use of ultra-violet light for therapeutic and other purposes (see "Practical Ultra-Violet Light Therapy," by McKenzie and King, p. 100, published by Ernest Benn, Ltd., 6s.). Other products on view are the company's well-known "Ibex" acid calcium phosphate, and Oxylene, a non-inflammable impregnant for wood.

Salt, Soap, etc.

Joseph Crosfield and Sons, Ltd., show, on the purely chemical side, glycerin, caustic soda, and silicate of soda. In addition there is a very comprehensive display of a wide range of Crosfield's well-known soaps, as well as such products as Glitto and Carbosil; and also cement.

A large number of products derived from natural brine are shown by the Salt Union, Ltd. In addition to a large variety of grades of salt there are also light carbonate of magnesia and calcium carbonate, hypochlorite of soda, bleaching powder, and caustic soda (the two latter substances being obtained by electrolysis of brine).

The Erasmic Co., Ltd., exhibit their Erasmic soaps, and, for the first time, a range of toilet necessities to complete the line. Lavender water is also shown.

Ozokerite Production in Russia

Revival of a Pre-War Industry

OZOKERITE (German-Erdwachs) is a wax-like petroleum substance, consisting mainly of paraffin, which has been formed in the course of thousands of years from diatoms or other organic matter in the absence of air. Under pressure, and at a fairly low temperature, it is converted into petroleum, but at higher temperatures it is transformed into heavy oil and asphalt. When purified with sulphuric acid, the black ozokerite yields a light-coloured or white ceresine, used in the electrical and textile industries, and, added to the extent of 20 per cent. to paraffin wax, it may be used for candle manufacture. The untreated black ozokerite is employed in the cable industry. Large deposits were discovered long ago in Galicia, and also in Utah (U.S.A.) and in certain parts of Russia, such as the Transcaspian region, and in Turkestan. The best and richest sources are found in the district of Krasnovodsk, on the island of Tscheleken, and in the so-called Naphtha Hills.

Before the war, the deposits in Fergana and Tscheleken were extensively worked, but for many years during and since the war, the work was stopped, and is only now being resumed to any extent. Until recently, the world's most valuable source of supply was Borislav in Galicia, but this appears to have seriously declined, and, therefore, the Russian supplies are so much the more interesting for possible future developments. In the Fergana region, ozokerite occurs in lime and sandstone beds some eight metres thick, to the extent, on an average, of 2 to 4 per cent. In Tscheleken, the percentage is somewhat lower. No very definite estimates are available as to the quantities present, although for the island of Tscheleken a rough approximation at 150,000 to 200,000 tons has been made.

Nature of the Product

These Russian deposits are said to be much better in quality than those of Galicia, and it has even been asserted that the price they fetch is three or four times as high as that of the Galician product, although they are somewhat inferior to this latter in point of firmness and stability. However, even in this respect, it is claimed that the Russian ozokerite is now the equal of any other. The crude ozokerite in Fergana is worked by the Turkmenzeros Co., and, before the war, was refined in a large factory at Neswetewitsch, near Lisitschansk, with a capacity of about 100,000 poods (nearly 3,000 tons) of ceresine per annum. At present the output is reduced to 800 tons of ceresine, which is chiefly used in the electrical and perfume industries. It is hoped to increase this very considerably before long. For dealing with the crude ozokerite obtained in Tscheleken, a factory has been built at Rostockino, near Moscow, the output from which, in 1926–7, is estimated at 3,000 tons of ceresine; so that the total Russian production of this refined product in 1926–7 should be about 4,000 tons. There is a large demand for this material both in Russia and in other countries. To encourage further the development of the industry, a concession has been granted to Italian-Belgian montan wax interests in the neighbourhood of the Schirak Steppe, in the Signach country, in co-operation with the Russian Government.

Death of Dr. Casale

A Great Chemist and Inventor

As we go to press we learn with much regret of the death of Dr. Luigi Casale, the well-known inventor of the Casale process for the production of synthetic ammonia, which took place on Friday, February 18, at Vagevano, near Milan. His process has come to be recognised as one of the principal three for the fixation of atmospheric nitrogen, and some time ago the United Alkali Co. decided to install a small unit. Next week we hope to give further details of Dr. Casale's important work as a chemist.

Anglo-French Conversations

A MEETING has been arranged, to take place on March 7 and 8, between representatives of French industry and of the Federation of British Industries. The British representatives will probably include Sir Max Muspratt. The French representatives will include M. Duchemin (president of the Union of Chemical Industries); M. Gounod (vice-president); and M. Roche (president of the Syndicate of Special Chemical Industries).

Effluents from Gasworks

Review of Modern Methods of Treatment

MR. EDGAR JONES, A.M.I.Chem.E. (Derby), read a paper of considerable chemical interest on "Drainage and Effluents from a Gasworks" at a meeting of the Midland Junior Gas Association on Thursday, February 17.

Dealing with the toxicities of some of the substances that occur in tar and ammoniacal liquor, Mr. Jones stated that the overflow water from gasholders caused most contamination. If local authorities were willing to take the effluent from ammonia plants into their sewage system, all that remained to be done was to remove the lime sludge and to cool the spent liquor to below 110° F. The question of cooling the spent liquor and settling the sludge could only be decided at the place where these substances were produced, and if it was not desired to utilise the heat from the liquor to pre-heat water or use a water cooler, the most simple method was to use large settling tanks fitted with baffle walls.

The acidic and objectionable constituents of ammoniacal liquor were chiefly present in the form of sulphides, ferrocyanides, sulphocyanides, thiosulphate, phenol and the higher phenols. In spent liquor there should be no trace of sulphuretted hydrogen present, but even then the oxygen absorbed figure (four hours at 27° C.), which was an indication of putrescible and toxic matter, might reach the total of 2,000 parts per 100,000. It was thought at one time that sulphocyanide was the most toxic agent of these effluents, but other objectionable constituents were thiosulphate and phenols. Weight for weight, phenol required for its oxidation more than twice the amount of oxygen of that required by sulphocyanide or thiosulphate. Phenol was usually present in much larger proportions than either of the other constituents; therefore a pre-treatment of ammoniacal liquor to recover the phenols would be a most suitable method of reducing the toxicity of the effluent and also making the treatment of the effluent, if not a paying proposition, at least a less expensive one. According to Skirrow, the amount of phenol lost in ammoniacal liquor is about half that produced during carbonisation, and this result he had confirmed.

In sulphate of ammonia plants the devil liquor and devil oils contained approximately 50 per cent. of the phenol present in the ammoniacal liquor distilled, and the effluent was thereby considerably improved if these oils were not returned to the still. It was a common practice to return these oils to the still, but this was to be deprecated, for they were a valuable product. Most people liked to dispose of these oils without trouble on account of the objectionable smell, due chiefly to hydrocyanic acid. This gas might be removed, however, by blowing air through the oils and allowing air to pass along the foul gas main, if oxide purification was in use, or, if not, through an alkaline spent oxide trap. They are then quite respectable to handle, and might be passed along to the tar plant for further treatment or sold as they were.

German and American Methods

Several methods had been proposed for pre-treatment of the liquor, notable amongst which was the method of removing the phenols with a suitable solvent such as benzol; the benzol was then either distilled to recover the phenol and render the benzol fit for use again, or it was washed with caustic soda to remove tar acid and then with acids to remove tar bases.

Dealing with the question of the removal of phenol from ammoniacal liquor, the author stated that a process has been installed in Germany for dealing with liquor containing about 3 per cent. of phenol. The results were at first disappointing, as only 30-40 per cent. of the phenol was removed, but after fixing centrifugal mixing pumps and mixing the liquor and benzol at a temperature of 65° C., the percentage recently recovered amounted to about 80. The residue of phenol left in the liquor was about ·07 per cent., and the inventors stated that this was reduced in passing through the plant, and of the residue the lime sludge takes up about 50 per cent.

Another process which had been developed in America was that the ammoniacal liquor passed downwards in series through two large cylindrical tanks while the benzol passed upwards, the clean benzol meeting the almost dephenolated liquor. The spent benzol was then distributed upwards through a caustic soda chamber, where the benzol was dephenolated. The sodium phenolate is steam distilled to remove benzol and other impurities, such as pyridine bases and naphthalene, and then carbonated to recover phenols and cresols. In this process provision had to be made for the removal of pyridine, which was extracted from the ammoniacal liquor by the benzol. This is done by the usual method of washing with sulphuric acid.

Experiments had shown him that the removal of phenol and its homologues by benzene extraction was a most suitable method for reducing the toxicity of the effluent from ammonia stills, the oxygen absorption figure of the effluent in some cases having been reduced by approximately 20 per cent. A decided advantage in colour of the effluent was also obtained, as the intensity of the reddish brown of the coloration of the effluents was reduced almost to a straw colour.

Internal Combustion Fuels

Problems Surveyed by Sir F. Nathan

PROFESSOR E. C. C. BALY presided at a meeting of the Liverpool Section of the Society of Chemical Industry held at the Liverpool University on Friday, February 18, over a large attendance, the lecturer being Colonel Sir Frederic L. Nathan, who took for his subject "Fuels for internal combustion engines." In introducing Sir Frederic to the meeting the Chairman said he was sure they all felt highly honoured by Sir Frederic's acceptance of their invitation.

Sir Frederic Nathan said he could not claim that there was anything very novel or original about his paper, but he would endeavour to give them a general idea of liquid fuels and a description of some of the materials and of the production which was now taking place. He said that so long as petrol was available at present prices its use would continue. Opinions differed as to how long supplies would equal requirements, but search for new sources was extending, improved methods of winning were constantly being introduced, recovery of natural gas was augmenting supply, and the quantities of light spirit obtained by "cracking" were increasing; moreover, the enormous shale deposits were practically untouched. On the other hand, it might be that the saturation point as regarded motor vehicles was being reached more rapidly than the world's supplies of petrol were being exhausted.

It was forty years since Daimler first ran a motor car propelled by a petrol engine, and since then the developments in the internal-combustion engine had revolutionised motor transport, and incidentally Sir Frederic mentioned that Great Britain was far ahead of any other country in regard to the number of motor cycles in use. Proceeding, Sir Frederic said that owing to the dependence of the British Empire on imported petrol the production of alternatives was a matter of importance.

Alternatives to Imported Petrol

Benzol, of which limited quantities were obtained from gasworks and coke ovens, was the most suitable alternative. Naphthalene from gasworks could be hydrogenated to produce liquid tetralin which could be used with benzol and alcohol as a motor fuel. Much consideration had been given to the matter of alcohol production; its large scale manufacture by fermenting the sugar and starch of vegetable materials was impossible in this country for many obvious reasons. In the Empire overseas, however, its manufacture in this way was possible, and was taking place, using molasses, cassava, sweet potatoes, etc., as raw materials.

A fermentation process was also being worked out for producing alcohol from tropical grasses, straws, and waste vegetable materials. This process might provide limited quantities of fuel in various parts of the empire. Other possible sources of alcohol in limited quantities were (*a*) sawdust and wood treated by the Prodor process; (*b*) ethylene recovered from coal and coke oven gases; (*c*) Acetaldehyde prepared from carbide, and (*d*) the lyes from the sulphite paper-making process.

Proceeding, Sir Frederic said that alcohol alone could not be used in existing engines to develop maximum efficiency; a mixture of alcohol, benzol, and petrol was quite suitable, however, and limited quantities were prepared, under the name of Discol, by the Distillers Co. Coal was the obvious raw material for the production of liquid fuels in this country, and by distilla-

tion some three gallons of motor fuel and other products were obtained from a ton of coal. At present the process was being worked commercially only in certain cases where all conditions were favourable.

Coal Liquefaction

The liquefaction of coal by the Bergius process had passed the experimental stage in Germany, and if it could be worked commercially the quantities of liquid fuel would be practically unlimited. The Badische Co. in Germany and Patart in France had made methyl alcohol commercially by passing hydrogen and carbon monoxide over catalysts. Fischer and Tropsch, the Badische Co., and Patart had also succeeded in making from the same gases mixtures of liquids suitable for motor fuels. So far, however, none of the processes had reached the commercial scale, although there was little doubt that success would be achieved at no very distant date.

The combustion of anthracite, gas coke, and charcoal in suction gas producers gave rise to gaseous fuels that could be used in existing motors, and coal gas could be similarly employed. Suction gas producers using charcoal prepared in portable charcoal burners in the forests were being fitted to motor lorries in France. There were one or two experimental types in this country designed to use anthracite, but low-temperature coke was also very suitable.

In concluding, Sir Frederic said it was not possible to predict which, if any, of these sources would develop to provide alternative liquid fuels. It might well be that before the supplies of motor spirit from petroleum and shale were exhausted some other form of propulsive power might have been discovered.

In proposing a vote of thanks the Chairman said they had all listened with the greatest interest to the admirable review given of what was really a very fascinating problem which was affecting all countries at the present moment with regard to the future supplies of motor fuels.

Professor Heilbron seconded the vote of thanks, and Sir Frederic's response concluded the proceedings, an informal dinner at which Sir Frederic was the guest of the Section following.

Metallurgical Spectroscopic Analysis

Some Adam Hilger Methods

At a meeting of the Society of Chemical Industry (Birmingham and Midland Section), at the University of Birmingham on Tuesday, February 8 (Mr. J. C. Mann presiding), Mr. F. Twyman, F.R.S. (Research Department, Adam Hilger, Ltd., London), lectured on "Metallurgical Spectroscopic Analysis."

In recent years, it was stated, attempts had been made in the laboratory of Adam Hilger, Ltd., and elsewhere, to find a method of quantitative analysis on observation of the varying intensities of the spectrum lines with the proportion of the corresponding ingredients. It was true, attempts of the kind were made many years ago and were not very successful. Recent attempts, however, had been more so. If they took any range of percentages of particular impurities in a particular metal they would find that there were certain lines which did not alter much in intensity, while there were usually other lines which altered rapidly in intensity. Quoting examples of quantitative analysis (the routine of which had been completely worked out) he observed that the instrument to use was the quartz spectrograph. Either the arc or spark spectrum was used for this work and in most cases the arc method was both simpler to use and more sensitive.

As a result of spectrographic investigations which had been carried out in the Hilger laboratories with various metals, it was stated that generally one could distinguish between 0·001 per cent., 0·01 per cent., 0·1 per cent., and 1·0 per cent. of any metallic impurity, and in many cases intermediate stages, by visual estimations of the comparative intensities of the lines. The tables of A. de Gramont were useful whether the arc or spark was used, since the lines which were persistent in the spectrum of the spark were persistent also in that of the arc. At the same time it should be observed that where one was dealing with a small quantity of metal of high melting point (such as iron or nickel) in a metal of low melting point (such as copper or aluminium) the arc was not so sensitive as a means of detection of impurity, the reason probably being that there was an insufficient quantity of vapour volatilised in the arc.

"C.A." Queries

We receive so many inquiries from readers as to technical, industrial, and other points, that we have decided to make a selection for publication. In cases where the answers are of general interest, they will be published; in others, the answers will simply be passed on to the inquirers. Readers are invited to supply information on the subjects of the queries :—

30 (*Basic Slag*).—"Can you recommend a reliable firm for basic slag?"

Chemical Matters in Parliament

Beet-Sugar Factories

Mr. Guinness, Minister for Agriculture, replying to Mr. Gillett (House of Commons, February 15), said that fourteen beet-sugar factories in Great Britain received subsidy in the 1926-27 manufacturing season and about 6,500 persons were employed in these factories. The area under sugar-beet in 1926 was 129,463 acres. Employment on the land on sugar-beet cultivation was mostly seasonal, and he had no particulars as to the number of persons engaged.

Gas Containers for Airship R. 100

Replying to Lt.-Commander Kenworthy (House of Commons, February 17), Major Cope stated that the gas containers required for the British airship R.100 were being manufactured by the B. G. Textilwerke G.m.b.H. of Berlin.

Beet-Sugar Factory Effluents

Mr. Hurd (House of Commons, February 21) asked the Minister of Agriculture if his Department had obtained information as to the means taken in Czechoslovakia and other sugar-beet growing countries to remedy the effluent difficulty which was now impeding the provision of new sugar-beet factories in this country? Mr. Guinness replied that reports had been obtained from all the principal beet growing countries. It did not appear from these reports that they had succeeded in overcoming the difficulties which confronted sugar manufacturers in this country and elsewhere in the disposal of effluents. He trusted that the information contained in the reports might facilitate scientific investigations which were being conducted by the manufacturers and the Government in co-operation.

Annual Dinner of the B.A.C.

Dr. Morgan's Address

On Saturday, February 19, the annual dinner of the London Section of the British Association of Chemists was held at the Engineering Club, Coventry Street, W. Dr. G. T. Morgan, director of the Chemical Research Laboratory of the Department of Scientific and Industrial Research, presided. The Association, he stated, was not antagonistic, but complementary to the Institute of Chemistry, and both bodies were concerned with the question of redefinition of the title "chemist." The Institute and the Association were taking steps to have the designation placed on a clearer footing. There were difficulties in the way of the registration of chemical practitioners, but they were not insuperable. He also touched on the question of an all-inclusive subscription for the chemical societies and institutions.

Mr. H. T. F. Rhodes, proposing the toast of "The London Section," said that the fuel problem to-day was of extraordinary importance. By the new Goldsbrough oil-gas process it was claimed that the cheaper and cruder kinds of oil could be volatilised into gas without carbonisation, and a gas equal, or practically equal, to coal gas for heating, lighting, and power obtained at a greatly reduced cost.

Mr. James Stewart, chairman of the London Section of the Institute of Brewing, replying to the toast of "Kindred Societies," proposed by Dr. Paul Haas, remarked that the research work which was being carried out in connection with the bottling of beer was more wonderful than the man in the street realised. At a special experimental station at Rothamsted, Sir John Russell was doing his best to get at the proper variety of barley which would yield the highest return to the farmer and at the same time give the brewer and the general public the best beverage. At Wye College research work also was being carried on in regard to hops.

From Week to Week

THE MELDOLA MEDAL has been awarded to Dr. R. G. W. Norrish, of Cambridge.

DR. H. A. MITCHELL, the medical superintendent of Evans, Sons, Lescher, and Webb's bacteriological laboratories, Runcorn, has been appointed pathologist to the Warrington Infirmary and Dispensary.

BERNARD HOLLAND AND CO., of 17, Victoria Street, London, S.W.1, state that, owing to heavy pressure on their space, their air compressor department is being removed to 15–21, Spenser Street, S.W.1.

DISEASES OF OCCUPATION reported during January, 1927, under the Factory and Workshop Act or under the Lead Paint (Protection Against Poisoning) Act, 1926, include one case of mercurial and one of arsenical poisoning.

PROFESSOR GRANVILLE POOLE presided at the annual dinner of the Armstrong College Mining Society on Saturday, February 19. He stated that in a few months' time it was hoped to start the building of the new mining department at Armstrong College, Newcastle.

MESSRS. TATE AND LYLE state that there is no prospect of an early resumption of work at their Plaistow wharf sugar refinery, which was closed last autumn. The Silvertown refinery started on Monday, February 14, after working half-time for two weeks and stopping completely for one week.

THE MANUFACTURE OF IRON AND STEEL from ore to the finished product was described by Mr. H. E. Wright, of Middlesbrough, in a lecture at Redcar on Tuesday. A film taken at Dorman, Long and Co.'s works on behalf of the Federation of British Industries was shown to illustrate the various processes.

BRUNNER, MOND AND CO., LTD., on Saturday, February 19, at Northwich, presented 36 gold medals, 123 gold watches, and 133 silver watches to employees with 40, 35, and 25 years' service respectively. Up to date 240 men have completed 40 years' service with the firm and 768 have completed 35 years.

UNIVERSITY NEWS.—The honorary degree of LL.D. of the University of Aberdeen has been conferred upon the following: Professor H. B. Baker, F.R.S., professor of chemistry in the Imperial College of Science and Technology, and president of the Chemical Society of London; Sir Frederick Gowland Hopkins, F.R.S., professor of biochemistry in the University of Cambridge.

SWISS CHEMICAL EXPORTS, exclusive of colours, for the first eleven months of 1926, were 257,843 quintals valued at 21,686,313 francs, as against 284,527 quintals valued at 23,362,352 francs in 1925. Exports of colours and colouring matter were 78,939 quintals valued at 58,072,059 francs as compared with 73,937 quintals valued at 58,498,242 francs in the first eleven months of 1925.

APPLICATIONS ARE INVITED for the following appointments: Research Assistant with qualification in physical chemisty at Huddersfield Technical College, £150. H. H. Gray, Department of Chemistry, Technical College, Huddersfield—Assistant Government Analyst in Nigeria, £600–£30–£720–£40–£920, plus free quarters. The Private Secretary (Appointments), Colonial Office, 38, Old Queen Street, London, S.W.1. March 1.

NEW CONSOLIDATED MINES OF CORNWALL, LTD., is the title of a new company which has been formed to take over all the China Clay works, agents, and connections of the Consolidated Mines of Cornwall, Ltd. The initial capital of the new company is £10,000, and its objects will be the production and sale of China Clay. Two of the first directors are Mr. Henry Van den Bergh and Sir Colman B. W. Rashleigh, and the registered offices are at St. Austell. The new company is a direct offspring of the old, and will be managed by the same directorate. Trading will be carried on from Duke Street, St. Austell.

CRUDE SHALE OIL is now, according to Australian reports, being produced at the Australian Shale Oil Corporation's works at Latrobe, Tasmania, at a cost of about fourpence per gallon, as a result of alterations recently made to the Bronder retort in operation at the works. Independent experts, who have closely investigated the process, are said to be of the opinion that the work could be carried on at a profit of over 40 per cent. Tests made by Mr. Watson, of the Victorian Mines Department, have shown that the retorting difficulties that had hampered the operations of the company have now been overcome, and all that is necessary to ensure profitable continuity of production is the completion of the refining plant.

BEET SUGAR NEWS.—Arrangements are in progress with a view to an early start in the building of the new sugar beet factory on the East Riding side of the river at Selby.—Mr. J. L. Anderson, speaking at the annual dinner, held in Perth on Friday, February 18, at the Perth branch of the National Farmers' Union, said that although agriculture at present was in a parlous state, the one bright factor last year was the success of the sugar beet industry. The Cupar factory had now secured contracts for about 6,500 acres, and the list was now closed, as there was to be no extension of the factory this year. That acreage would probably produce 60,000 tons of beet, and this will keep the factory in full operation from about he beginning of October until the end of February next.

SIR EDWARD A. BROTHERTON has been nominated for a seat on the board of the British Alizarine Co.

MR. FREDERICK STACEY HOOKER, chairman of the Rubber and Industrial Trust, Ltd., has joined the board of The Cheshire United Salt Co., Ltd.

THE COUNCIL OF THE ROYAL SOCIETY recommend the following gentlemen, among others, for election into the society: Professor James Kendall and Dr. J. W. Meltor.

THE SUN LANE ENGINEERING WORKS, Shooters Hill Road, Blackheath, S.E.3, manufacturers of the Hurrell homogeniser, have altered their title and address as follows: G. C. Hurrell and Co., Old School Works, Woolwich, Charlton, S.E.7.

AGRICULTURAL AND GENERAL ENGINEERS, LTD., announce that Sir Charles E. Low, K.C.I.E., formerly Secretary to the Commerce and Industry Department of the Government of India, and a member during the War of the Indian Munitions Board, has been appointed to take charge of the Indian interests of the fourteen engineering firms it controls.

SIR ALFRED MOND, chairman of the Amalgamated Anthracite Co., Ltd., and other industrial undertakings, has taken the initiative in establishing a superannuation fund for aged or disabled workmen. The first announcement of it was made by Sir Alfred Cope when he met the workmen of one of the collieries at a mass meeting, and it was welcomed with enthusiasm.

RECENT WILLS INCLUDE: Mr. General Henry Monk, of Brighton, retired chemical manufacturer, £5,462; Mr. Harold H. Sissons, of North Ferriby, chairman of Sissons Bros. and Co., Ltd., paint and varnish manufacturers, of Hull, first chairman of the National Federation of Paint, Colour and Varnish Manufacturers, £35,121; Mr. Jeremiah Alfred Parr, of Dewsbury, dye and ink manufacturer, formerly Mayor of Dewsbury, £7,300.

THE ANNUAL REPORT to the Worshipful Company of Clothworkers of the City of London on textile industries and colour chemistry and dyeing states that starting from investigations into the characteristics of British types of wool, important lines of research have been developed, and that the results obtained will increase our knowledge of and control over the manufacturing processes from the raw material to the finished fabric.

INTERNATIONAL COMBUSTION, LTD., announce that their associate company, S. A. Feyers Automatiques, Paris, have obtained a contract for a complete "Lopulco" installation at the Alost plant of the Société Générale de Soie Artificielle "Viscose." This order covers the supply of Raymond pulverising equipment, "Lopulco" hollow wall air-cooled combustion chambers with water screens, feeders, piping, burners, and electrical equipment.

THE INSTITUTION OF CHEMICAL ENGINEERS announce that examinations for the Associate-Membership of the Institution will be held in June and July next. Particulars of the examinations and the memorandum on "The Training of a Chemical Engineer" may be obtained on application to the Hon. Registrar, Mr. C. S. Garland, The Institution of Chemical Engineers, Abbey House, Westminster, London, S.W.1. Applications for entry must be received not later than May 1 next.

INVERESK PAPER CO. shareholders are informed that the chairman has just returned from a visit to the Continent, in the course of which the question of disposing of the Koholyt interests has been under consideration. In view of the present ascertained earning capacity of the Koholyt Works, which, from accounts just prepared up to December 31 last, considerably exceeds prospectus estimates, the directors are not prepared to recommend acceptance of any of the offers so far received.

PROFESSOR H. STEENBOCK, head of the department of agricultura chemistry in the University of Wisconsin, claims to have perfected a process whereby foods, treated with ultra-violet radiation, are provided with great powers for building up the bone tissues of the bodies of human beings and the lower animals. He claims that experiments have proved that his sun-treated foods cure rickets and rebuild bones which have been impoverished by tuberculosis and other diseases. He intends to make the process available for general public use, instead of selling his patents for exploitation in the ordinary way.

THE BRANSTON ARTIFICIAL SILK CO., LTD., on Wednesday opened its subscription list for 1,000,000 ordinary shares of £1 at par, and 1,700,000 deferred shares of 4s. each at 5s. per share. The technical advisers are Dr. J. N. Goldsmith, Dr. A. G. Perl, and Mr. J. Swinburne, F.R.S. The company has been formed to manufacture artificial fibres by any process and especially artificial viscose silk, but the company will not necessarily limit its activities to production by the viscose process. On the contrary, provisional arrangements are in progress for the commencement of the manufacture of silk by another tested and proved process. The company has agreed to purchase a freehold factory and land at Branston, adjoining Burton-on-Trent. This factory has been occupied by Crosse and Blackwell, Ltd., who acquired it in 1921 from the Government.

Obituary

MR. JOSEPH ELLIS, 83, of West Toxteth. He was formerly employed by the United Alkali Co., Ltd.

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The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

264,549. DISTILLING HYDROCARBONS AND OTHER LIQUIDS, AND FRACTIONALLY CONDENSING THE VAPOURS, PROCESS AND APPARATUS FOR. R. B. Millard, E. K. Atckison, C. D. Coulter, and South-Western Engineering Corporation, 1221, Hollingsworth Building, Los Angeles, Cal., U.S.A. Application date, August 19, 1925.

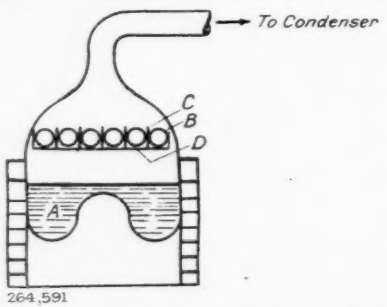
The mixed vapours are subjected to a temperature which condenses the higher-boiling fractions, and the condensate and uncondensed vapours are passed into a separating chamber. The condensate is then brought into contact with the uncooled vapour before condensation so that any lower boiling fractions are vaporised from the condensate. The object of the process is to obtain condensates which are free from vapour which should condense at a lower temperature, and the process and apparatus are described in detail.

264,561. VAT COLOURING MATTERS OF THE ANTHRAQUINONE SERIES, PRODUCTION OF. J. Y. Johnson, London. From Badische Anilin und Soda Fabrik, Ludwigshafen-on-Rhine, Germany. Application date, October 10, 1925.

These vat colouring matters are α-benzoylamino-anthraquinones which contain in a benzoyl group or in more than one benzoyl group a substituent in meta position. Substituents such as free hydroxy or amino groups, nitro or cyan groups should not be present as the dyestuffs are less fast, but substituents such as alkyl groups, etherified hydroxy groups, etherified mercapto groups, etc., are suitable. The dyestuffs are obtained by boiling an α-amino-anthraquinone with a meta substituted benzoyl chloride or benzoic anhydride, or by heating a mixture of the amino-anthraquinone and a meta substituted benzoic acid in the presence of a condensing agent, such as thionylchloride, phosphorus pentachloride, zinc chloride, etc. Examples are given of the production of dyestuffs from 1 : 4-diamino-anthraquinone and metamethoxy-benzoyl chloride, and other similar anthraquinones with other ethers of meta-oxy-benzoyl-chloride ; 1 : 4-diamino-anthraquinone and metatoluic acid chloride ; 1-amino-anthraquinone and isophthalic acid with thionyl chloride as condensing agent. Particulars of the number of similar dyestuffs and the colours obtainable are given.

264,591. DISTILLATION PLANT. J. N. Hazelden, 124, Kingston Road, New Malden, Surrey. Application date, October 21, 1925.

This apparatus is for distilling coal tar and other substances requiring dehydration before distillation. The tar flows in a



264,591

shallow stream over a tray D having steam pipes B and baffles C in spiral form. The steam and tar are arranged to flow in opposite directions. The dehydrated tar then drops into the main body of tar A below, which is directly heated.

264,601. HARDENING PHENOL-UREA-FORMALDEHYDE PRODUCTS. H. V. Potter and J. W. Crump, Damard Lacquer Works, Warwick Road, Greet, Birmingham, and Damard Lacquer Co., Ltd., 82, Victoria Street, London, S.W.1. Application date, October 23, 1925.

Specification 256,711 (see THE CHEMICAL AGE, Vol. XV, p. 278) describes the preparation of synthetic resins by the condensation of phenols, ureas, and aldehydes. In this invention, the product in the intermediate semi-solid stage is treated in the cold with a hardening agent such as sulphuric, nitric, hydrochloric, phosphoric or oxalic acid, or salts having an acid reaction such as aniline hydrochloride, urea nitrate, ammonium chloride, phenyl-hydrazine hydrochloride, or ammonium sulphocyanide. The product becomes hard, insoluble and infusible. The rate of hardening depends on the proportions of phenol and urea in the product, the presence or absence of an accelerator or condensing agent in the original material, the particular hardening agent employed, and the relative proportion. The hardening may be accelerated by heating.

264,631. VAT DYESTUFFS, MANUFACTURE OF. J. Y. Johnson, London. From Badische Anilin und Soda Fabrik, Ludwigshafen-on-Rhine, Germany. Application date, November 19, 1925.

These dyestuffs are obtained by treating with alkaline condensing agents, alkyl ethers of hydroxybenzanthrones halogenated in the Bz1-position, but with a free 2-position with the exception of the alkoxy-benzanthrones halogenated in the Bz1-position which are obtained by converting a Bz1-halogen-benzanthrone into a nitro compound, reducing to an amino-compound, substituting a hydroxyl group for the amino group, and alkylating the product. An example is given.

264,673. VULCANISING RUBBER, PROCESS FOR. W. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, February 15, 1926.

A condensation product of crotonaldehyde or an α-β-substituted acrolein with an aromatic amine is employed as an accelerator of vulcanisation. A solvent or diluent and a condensation product may be employed. The accelerator is used in the proportion of about 1 per cent. and vulcanisation is effected at 140° C. and 3 atmospheres pressure in about 30 minutes.

264,674. NEW CONDENSATION PRODUCTS OF SUBSTITUTED ACROLEINS, MANUFACTURE OF. W. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, February 15, 1926.

An α-β-substituted acrolein is condensed with an aromatic base in presence of a solvent and condensing agent to obtain products which are vulcanisation accelerators. Examples are given of products obtained from α-ethyl-β-propyl-acrolein and aniline, and α-isopropyl-β-isobutyl-acrolein and aniline.

264,682. MONO- AND DI-CARBALKOXY-DIARYLTHIOUREAS AS ACCELERATORS IN THE VULCANISATION OF RUBBER. British Dyestuffs Corporation, Ltd., 70, Spring Gardens, Manchester, C. J. T. Cronshaw, and W. J. S. Naunton, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, March 1, 1926.

Mono- and di-carbalkoxy-diarylthioureas for use as vulcanisation accelerators are made by the action of thiophosgene on alkyl anthranilates. The crude reaction mixture may be used, but the products are preferably isolated. A rubber mixture containing rubber 100 parts, zinc oxide 10 parts, sulphur 10 parts, and di-ortho-carbethoxy-diphenylthiourea after vulcanisation for 2½ minutes at 141° C. shows a tensile strength of 3,600 lb. per square in., about double that obtained when using diphenylthiourea.

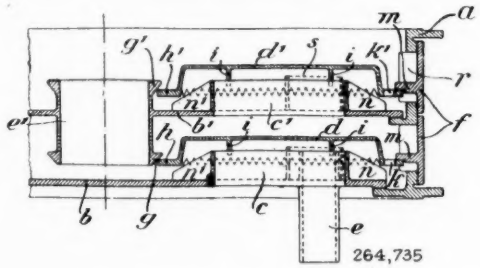
264,724. SODIUM MONOXIDE, MANUFACTURE OF. The Roessler and Hasslacher Chemical Co., 709, Sixth Avenue, New York. International Convention date, January 29, 1926. Addition to 253,520. (See THE CHEMICAL AGE, Vol. XV, p. 209.)

Sodium monoxide as manufactured by the usual methods contains sodium and sodium peroxide. In this invention, finely divided sodium monoxide is used as a carrier of molten sodium which is to be oxidised. It is found that up to 10 per cent. of metallic sodium can be absorbed by sodium monoxide which still remains a dry powder. Air is used as the oxidising agent, the oxygen concentration in the reaction vessel being

kept below 10 per cent. The reaction mass does not then become overheated, and the temperature is kept below 250° C. Sodium monoxide is obtained in pure form.

264,735. DISTILLATION COLUMNS. C. Still, 4, Bismarckplatz, Recklinghausen, Germany, and A. Kuhn, 16, Hernerstrasse, Recklinghausen, Germany. Application date, July 20, 1926.

The trays *b*, *b'* in the cylindrical casing *a*, are provided with vapour passages *c*, *c'* covered by the usual hoods *d*, *d'*. These are of approximately rectangular shape in plan, but with two sides tapering towards the axis of the still. Liquid overflow



passages, *e*, *e'* are alternately at the centre and circumference of the still. An opening *r* closed by a cover *f* is provided opposite each of the hoods *d*, *d'*, for inserting or removing the hoods. The hoods are not bolted to the trays, but the inner end *h'* engages below a projection *g'* while the outer end *k'* engages below a lug *m* on the cover *f*. Cross-bars *i* rest on the rim of the opening *c* or *c'*.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention :—244,424 (H. Harris), relating to treatment of impure molten metal, see Vol. XIV, p. 23 (Metallurgical Section); 248,375 (Petroleum Chemical Corporation), relating to preparation of olefines, see Vol. XIV, p. 506; 252,362 (G. L. E. Patart), relating to plant for gaseous catalytic reactions at high temperature and pressure, see Vol. XV, p. 141; 253,540 (Soc. d'Etudes Minières et Industrielles), relating to manufacture of ammonia, see Vol. XV, p. 209; 253,877 (Zaidan Hojin Rikagaku Kenkyujo), relating to preparation of maleic and succinic acid from furfural, see Vol. XV, p. 210; 255,887 (Roessler and Hasslacher Chemical Co.), relating to production of esters from amide acid sulphates, see Vol. XV, p. 332.

International Specifications not yet Accepted

263,128. CELLULOSE ESTERS. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, December 19, 1925.

Cellulose is treated with formic acid above 5 per cent. strength, preferably concentrated acid, the excess of acid removed, and the product washed and dried. Esterification of the cellulose subsequently is thereby accelerated, and less anhydride is necessary.

263,153. KETONES AND CARBOXYLIC ACIDS. M. Naef et Cie, 1, Chemin des Melezes, Geneva, Switzerland. International Convention date, December 15, 1925. Addition to 235,540.

The carbocyclic ketones described in specification 235,540 (see THE CHEMICAL AGE, Vol. XIII, p. 176), having more than nine ring members and their alkyl derivatives, are obtained from the acids or anhydrides of the polymethylene dicarboxylic acids or their alkyl derivatives, either alone or using metals or metallic combinations of earths or rare earth metals or their derivatives, or compounds of uranyl. Thus, the aluminium salt of 3-methyl-tetradecane-1 : 14-dicarboxylic acid is heated to 300°–500° C. in vacuo to obtain 3-methyl-cyclopentadecanone. The distillate is fractionated and treated with semicarbazide to isolate the ketone. Other examples are given of the preparation of 4-methyl-cyclopentadecanone, and the treatment of the erbium or uranyl salt of tetradecane-1 : 14-dicarboxylic acid, or the didymium salt of octadecane-1 : 18 dicarboxylic acid to obtain ketones.

263,163. POLYCYCLIC KETONES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, December 15, 1925.

Aromatic or heterocyclic ketones, substituted by halogen in the *o*- or *peri*-position to the carbonyl group are heated in the dissolved, molten, or gaseous state with a salt of an alkali or alkaline earth or an acid-binding agent of slightly alkaline action, such as sodium or calcium carbonate, sodium acetate, or magnesium oxide. Copper, or carbonate of iron or copper may be present as a catalyst. Cyclic ketones are obtained, and examples are given of the production of fluorone from *o*-chlorbenzoylbenzene, benzanthrone from *o*-chlorbenzoyl-naphthalene, 4-methylbenzanthrone from 1-*o*-chlorbenzoyl-2-methylnaphthalene, and Bz2-dimethyl-benzanthrone from 1-*o*-chlorbenzoyl-2 : 6 : dimethylnaphthalene.

263,164. DYES.—I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, December 15, 1925.

Diazo compounds are combined with arylamides of 2 : 3-oxynaphthoic acid sulphonated in the oxynaphthoic nucleus and which can be made by sulphonating the parent arylamides as described in specification 183,428 (see THE CHEMICAL AGE, Vol. VII, p. 462). Dyes suitable for dyeing animal or vegetable fibres or for the production of lakes are obtained according to the components used.

263,167. PURIFYING OILS. Bataafsche Petroleum Maatschappij, The Hague, Holland. International Convention date, December 15, 1925.

Lubricating and other oils containing paraffin are refined by means of liquid sulphur dioxide, and the separated upper layer is filtered while still saturated with dioxide.

263,173. PRESERVING WOOD. B. V. Malenkovic, Neulenbach, Austria. International Convention date, December 16, 1925.

Wood preservatives are made by the action of primary aromatic amines on halogen dinitro derivatives of benzol or its homologues. The compound obtained from α-naphthylamine and chlorodinitrobenzol is the most effective. The compounds can be transformed into the corresponding secondary amines.

263,178. ANTHRAQUINONE DERIVATIVES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, December 17, 1925.

o-Aminoanthraquinone-thiohydrins, which are intermediate products and also applicable for dyeing cellulose acetate, are obtained by condensing *o*-aminoanthraquinone-mercaptans with halogen-hydrins. Examples are given of the condensation of ethylene-chlorhydrin with the sodium salts of 1-aminoanthraquinone-2-mercaptan, 1 : 4-diamino-3-chloranthraquinone-2-mercaptan, 1-amino-4-*p*-toluidoanthraquinone-2-mercaptan, and others.

263,179. DYES. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, December 17, 1925. Addition to 263,178.

The thiohydrins described in specification 263,178 above are treated with acid condensing agents to obtain thiomorpholines. Oleum, sulphuric acid, or zinc chloride may be used as condensing agents, and examples are given of the production of red dyes for acetate silk.

263,191. DYESTUFF INTERMEDIATES. Chemical Works formerly Sandoz, Basle, Switzerland. International Convention date, December 19, 1925.

2 : 4-dinitrophenoxy-ethanol or -propandiol is treated with a reducing agent such as sodium tetrasulphide, to obtain 2-amino-4-nitrophenoxy-ethanol or -propandiol which may be used for the preparation of dyestuffs.

263,192. DYES. Chemical Works formerly Sandoz, Basle, Switzerland. International Convention date, December 19, 1925.

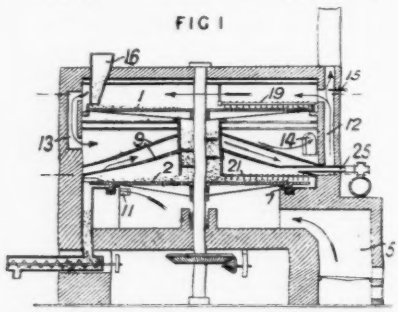
These dyes are obtained by condensing dinitrostilbene- or dinitrodibenzyl-disulphonic acid with aminoazo compounds, and treating the resulting dyestuffs with oxidising agents. The products are substantive dyestuffs fast to alkali. Alternatively, *p*-nitrotoluene-sulphonic acid is treated with caustic soda, and the dyestuff condensed with aminoazo compounds. In an example, dinitrostilbene-disulphonic acid is condensed with metanilic acid-azo-*m*-amido-*p*-cresolmethylether and the

dyestuff oxidised by boiling with sodium hypochlorite in caustic soda solution.

263,197. Low Temperature Carbonisation. C. ab der Halden, Nomexy, Vosges, France. International Convention date, December 21, 1925.

The powdered material is fed from a hopper 16 to a rotary pan 1 where it is dried by the hot gases, and then passes to a pan 2 in a casing 9, provided with a gastight seal 7 and heated

FIG 1



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below by hot gases from a furnace 5. The hot gases then pass between the casings 9 to a flue 12, and then over the material in the pan 1. The gases then pass through a flue 13 to an opening 14, and thence to the outlet. The drying of the material in the pan 1 is controlled by a damper 15.

263,198–9. Silica Gel. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, December 19, 1925.

263,198. A silica gel having wide pores is obtained by preparing a silica jelly by way of a neutral, nearly neutral, or slightly acid sol, and an electrolyte is added before or during drying such as to impart to it a hydrogen ion concentration for p_H between 7 and 13. The process is described in detail.

263,199. A silica gel having fine pores is obtained by preparing a silica jelly as above, and an electrolyte is added before or during drying such as to impart to it a hydrogen ion concentration p_H between 1 and 6·5. The process is described in detail.

Latest Notifications.

265,930. Vulcanisation of rubber substances and products obtained therefrom. Grasselli Chemical Co. February 12, 1926.

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265,960. Manufacture and production of primary aliphatic and cyclic amines. I.G. Farbenindustrie Akt.-Ges. February 9, 1926.

265,964. Manufacture of vat-dyestuffs. I.G. Farbenindustrie Akt.-Ges. February 9, 1926.

265,984. Recovery of benzenes from coal gas. Naamlooze Vennootschap Silica en Ovenbouw Mij. February 12, 1926.

265,985. Manufacture of new solid diazosalts. I.G. Farbenindustrie Akt.-Ges. February 12, 1926.

265,986. Manufacture of acid dyestuffs of the phenonaphthosafranine series. Geigy Akt.-Ges., J. R. February 13, 1926.

265,989. Decomposition of hydrocarbons by means of water vapour. I.G. Farbenindustrie Akt.-Ges. February 11, 1926.

265,994. Process for the manufacture of compounds of carbon and sulphur, particularly carbon disulphide or organic sulphur compounds. Komlos, J., Komlos, A., and Engelke, E. F. February 15, 1926.

266,007. Contact sulphuric acid process. Monsanto Chemical Works. February 15, 1926.

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242,975. Separating solid salts of ammonium and of the alkalies or alkaline earths, Process for. Farbwerke vorm. Meister, Lucius, und Brüning. November 4, 1925.

246,809. Complex aurosodium thiosulphate solutions, Manufacture of. L. Cassella and Co. Ges. January 27, 1925.

249,497. Quinolinic anhydride, Manufacture of. Soc. of Chemical Industry in Basle. March 19, 1925.

250,194. Alloys of copper, nickel, and aluminium, Manufacture of. International Nickel Co. March 31, 1925.

252,212. Sulpho-aromatic fatty acids, Production of. G. Petroff. May 18, 1925.

257,259. Titanic acid fast to light, Production of. Deutsche Gasgluhlicht-Auer-Ges. August 20, 1925.

261,377. Complex metal alcoholates. Chemische Fabrik auf Actien (vorm. E. Schering). November 12, 1925.

262,795. Decarbonising ferrochrome, Method of. W. B. D. Penniman and E. J. Shackelford. September 3, 1925.

264,916. Anthraquinone derivatives, Production of. H. A. E. Drescher, W. Smith, and Scottish Dyes, Ltd. July 21, 1925.

265,252. Concentration or purification of caustic soda. C. F. Hammond and W. Shackleton. September 5, 1925.

265,259. Halogen hydrins, Manufacture of. C. L. Long, F. G. Willson, and T. S. Wheeler. October 2, 1925.

265,267. Cellulose acetate, Manufacture of. L. A. Levy and O. Silberrad. August 7, 1926.

265,292. Electrolytic deposition of cadmium. E. C. R. Marks. (*Grasselli Chemical Co.*) November 4, 1925.

265,305. Alkali cyanides, Manufacture of. S. Coulier. November 7, 1925.

265,336. Lactic acid and lactates, Manufacture of. S. E. Faithfull. December 8, 1925.

265,375. Low boiling hydrocarbons and other products from distillation products from bituminous materials. Braunkohlen-Produkte Akt.-Ges., K. Bube, and E. Erlenbach. February 3, 1926.

265,435. Fractional distillation at a low temperature of solid fuels, Process and apparatus for. A. Meiro. May 12, 1926.

265,491. Benzyl celluloses, Manufacture of. W. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) October 1, 1926.

265,639. Alkali metal cyanides, Manufacture of. Deutsche Gold- und Silber-Scheideanstalt vorm. Roessler and H. Freudenberg. February 15, 1926.

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Achille Serre, Ltd., E. A. Alliott, and Hatfield, A. E. Cleaning processes. 4,275, 4,277. February 15.

Achille Serre, Ltd. Manufacture of soaps. 4,276. February 15.

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Carpmael, W., and I.G. Farbenindustrie Akt.-Ges. Manufacture of azo dyestuffs. 4,402. February 16.

Carpmael, W. Dyestuffs. 4,626. February 18.

Chemische Fabrik auf Actien vorm. E. Schering. Manufacture of aliphatic auromercapto carboxylic acids. 4,265. February 15. (Germany, February 17, 1926.)

Coles, S. O. Cowper-. Production of caustic soda and silica. 4,021. February 14.

Coles, S. O. Cowper-. Protection of metallic surfaces from corrosion. 4,022. February 14.

Coles, S. O. Cowper-. Protecting iron and steel surfaces from corrosion. 4,666. February 19.

Coles, S. O. Cowper- T. Pressure-reducing valves, etc. 4,393. February 16. (United States, February 16, 1926.)

Croad, A. K. (Zieley Processes Corporation). Distillation of carbonaceous material. 4,056. February 14.

Davis, F. Dyeing machines. 4,712. February 19.

Dux Chemical Solutions Co., Ltd. Rendering canvas rot and water proof. 4,596. February 18.

Haller, P. and Kappeler, H. Condensation products of arylamines. 4,478. February 17. (Germany, January 24.)

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of salts of alkaline-earth metals. 4,072. February 14.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of vat dyestuffs. 4,073. February 14.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Production of calcium formaldehyde sulphoxylate. 4,074. February 14.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of depolymerisation products from carbohydrates. 4,264. February 15.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Production, treatment, and storage of hydrogen peroxide. 4,368. February 16.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Production of ketones of the anthracene series. 4,369. February 16.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Continuous evaporation, etc., of difficultly distillable liquids. 4,484. February 17.

I.G. Farbenindustrie Akt.-Ges. Priming wood, etc. supports. 4,485. February 17. (Germany, February 17, 1926.)

I.G. Farbenindustrie Akt.-Ges. Production of urea. 4,746. February 19. (Germany, February 19, 1926.)

Monsanto Chemical Works. Contact sulphuric acid process. 4,153. February 14. (United States, February 17, 1926.)

Nyrop, J. E. Preparing latex for rubber manufacture. 4,282. February 15.

Salerni, P. M. Distillation of carbonaceous materials. 4,499. February 17.

Sharp, A., and Soc. Générale Métallurgique de Hoboken. Manufacture of sulphuric acid. 4,731, 4,732. February 19.

Travers, M. W. Apparatus for low-temperature distillation of coal, etc. 4,217. February 15.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.
ACID BORIC, COMMERCIAL.—Crystal, £34 per ton; powder, £36 per ton.
ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.
ACID NITRIC, 80° TW.—£21 10s. to £27 per ton, makers' works, according to district and quality.
ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.
BISULPHITE OF LIME.—£7 10s. per ton, packages extra, returnable.
BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.
BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)
CALCIUM CHLORIDE (SOLID).—£5 12s. 6d. to £5 17s. 6d. per ton d/d carr. paid.
COPPER SULPHATE.—£25 to £25 10s. per ton.
METHYLATED SPIRIT 61 O.P.—Industrial, 2s. 5d. to 2s. 10d. per gall.; pyridinised industrial, 2s. 7d. to 3s. per gall.; mineralised, 3s. 6d. to 3s. 10d. per gall.; 64 O.P., 1d. extra in all cases; prices according to quantity.
NICKEL SULPHATE.—£38 per ton d/d.
NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
POTASH CAUSTIC.—£30 to £33 per ton.
POTASSIUM BICHROMATE.—4½d. per lb.
POTASSIUM CHLORATE.—3¾d. per lb., ex wharf, London, in cwt. kegs.
SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.
SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.
SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.
SODA CRYSTALS.—£5 to £5 5s. per ton ex railway depots or ports.
SODIUM ACETATE 97/98%.—£21 per ton.
SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.
SODIUM BICHROMATE.—3½d. per lb.
SODIUM BISULPHITE POWDER, 60/62%.—£17 per ton for home market, 1-cwt. iron drums included.
SODIUM CHLORATE.—2¾d. per lb.
SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.
SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.
SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.
SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.
SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.
SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—6d. per lb. Crude 60's, 1s. 8½d. to 1s. 9½d. per gall.
ACID CRESYLIC 99/100.—2s. 3d. to 2s. 4d. per gall. Steady. 97/99.—2s. to 2s. 1d. per gall. Pale, 95%, 1s. 10d. to 2s. per gall. Dark, 1s. 9d. to 1s. 10d. per gall.
ANTHRACENE.—A quality, 2½d. to 3d. per unit. 40%, 3d. per unit.
ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.; both according to gravity.
BENZOLE.—Crude 65's, 1s. 3d. to 1s. 4d. per gall., ex works in tank wagons. Standard Motor, 1s. 11d. to 2s. 4d. per gall., ex works in tank wagons. Pure, 2s. 2d. to 2s. 5d. per gall., ex works in tank wagons.
TOLUOLE.—90%, 1s. 11½d. to 2s. 3d. per gall. Firm. Pure, 2s. 2½d. to 2s. 6d. per gall.
XYLOL.—2s. 3d. to 2s. 6d. per gall. Pure, 4s. per gall.
CREOSOTE.—Cresylic, 20/24%, 10½d. per gall. Standard specification, 6¾d. to 9d.; middle oil, 7½d. to 8d. per gall. Heavy, 8½d. to 9d. per gall.
NAPHTHA.—Crude, 9½d. to 1s. 0½d. per gall. according to quality. Solvent 90/160, 2s. to 2s. 1d. per gall. Solvent 95/160, 1s. 9d. to 1s. 10d. per gall. Solvent 90/190, 1s. 3½d. to 1s. 4d. per gall.
NAPHTHALENE CRUDE.—Drained Creosote Salts, £8 per ton. Whizzed or hot pressed, £8 10s. per ton.
NAPHTHALENE.—Crystals, £11 10s. to £12 10s. per ton. Quiet. Flaked, £12 10s. per ton, according to districts.
PITCH.—Medium soft, 105s. to 115s. per ton, according to district.
PYRIDINE.—90/140, 9s. 6d. to 13s. per gall. Nominal. 90/180, 7s. 6d. per gall. Heavy, 5s. to 8s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.
ACID ANTHRANILIC.—6s. per lb. 100%.
ACID BENZOIC.—1s. 9d. per lb.
ACID GAMMA.—8s. per lb.
ACID H.—3s. 3d. per lb. 100% basis d/d.
ACID NAPHTHIONIC.—1s. 6d. per lb. 100% basis d/d.
ACID NEVILLE AND WINTHER.—4s. 9d. per lb. 100% basis d/d.
ACID SULPHANILIC.—9d. per lb. 100% basis d/d.
ANILINE OIL.—7d. per lb. naked at works.
ANILINE SALTS.—7d. per lb. naked at works.
BENZALDEHYDE.—2s. 3d. per lb.
BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.
BENZOIC ACID.—1s. 8½d. per lb.
o-CRESOL 29/31° C.—4d. to 4½d. per lb.
m-CRESOL 98/100%.—2s. 8¾d. per lb.
p-CRESOL 32/34° C.—2s. 8¾d. per lb.
DICHLORANILINE.—2s. 3d. per lb.
DIMETHYLANILINE.—2s. per lb. d/d. Drums extra.
DINITROBENZENE.—9d. per lb. naked at works.
DINITROCHLORBENZENE.—£84 per ton d/d.
DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.
DIPHENYLAMINE.—2s. 10d. per lb. d/d.
a-NAPHTHOL.—2s. per lb. d/d.
B-NAPHTHOL.—11d. to 1s. per lb. d/d.
a-NAPHTHYLAMINE.—1s. 3d. per lb. d/d.
B-NAPHTHYLAMINE.—3s. per lb. d/d.
o-NITRANILINE.—5s. 9d. per lb.
m-NITRANILINE.—3s. per lb. d/d.
p-NITRANILINE.—1s. 9d. per lb. d/d.
NITROBENZENE.—7d. per lb. naked at works.
NITRONAPHTHALENE.—1s. 3d. per lb. d/d.
R. SALT.—2s. 4d. per lb. 100% basis d/d.
SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.
o-TOLUIDINE.—7½d. per lb. naked at works.
p-TOLUIDINE.—2s. 2d. per lb. naked at works.
m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 5s. per ton. Good demand. Grey, £15 10s. per ton. Liquor, 9d. per gall. 32° Tw.
CHARCOAL.—£7 to £10 per ton, according to grade and locality. Quiet.
IRON LIQUOR.—1s. 3d. per gall. 32° Tw. 1s. per gall. 24° Tw.
RED LIQUOR.—9d. to 1s. per gall. 16° Tw.
WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.
WOOD NAPHTHA, MISCIBLE.—4s. per gall., 60% O.P. Solvent, 4s. 3d. per gall., 40% O.P. Both in good demand.
WOOD TAR.—£4 to £5 10s. per ton and upwards, according to grade. Better demand.
BROWN SUGAR OF LEAD.—£41 to £42 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 5½d. per lb., according to quality, Crimson, 1s. 3d. to 1s. 7½d. per lb., according to quality.
ARSENIC SULPHIDE, YELLOW.—2s. per lb.
BARYTES.—£3 10s. to £6 15s. per ton, according to quality.
CADMIUM SULPHIDE.—2s. 9d. per lb.
CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.
CARBON BLACK.—5½d. per lb., ex wharf.
CARBON TETRACHLORIDE.—£46 to £55 per ton, according to quantity, drums extra.
CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.
DIPHENYLGUANIDINE.—3s. 9d. per lb.
INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5¾d. to 6¼d. per lb.
LAMP BLACK.—£35 per ton, barrels free.
LEAD HYPOSULPHITE.—9d. per lb.
LITHOPONE, 30%.—£22 10s. per ton.
MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton f.o.r. London.
SULPHUR.—£9 to £11 per ton, according to quality.
SULPHUR CHLORIDE.—4d. per lb., carboys extra.
SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.
THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb. carriage paid.
THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.
VERMILION, PALE OR DEEP.—5s. 3d. per lb.
ZINC SULPHIDE.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

Acid, Acetic, Pure, 80%.—£39 per ton ex wharf London in glass containers.

Acid, Acetyl Salicylic.—2s. 4½d. to 2s. 6d. per lb.

Acid, Benzoic B.P.—2s. to 2s. 3d. per lb., according to quantity. Solely ex Gum, 1s. 3d. per oz.; 500 oz. lots, 1s. per oz.

Acid, Boric B.P.—Crystal, £41 per ton; powder, £45 per ton. Carriage paid any station in Great Britain, in ton lots.

Acid, Camphoric.—19s. to 21s. per lb.

Acid, Citric.—1s. 3½d. to 1s. 4½d. per lb., less 5%.

Acid, Gallic.—2s. 8d. per lb. for pure crystal, in cwt. lots.

Acid, Pyrogallic, Crystals.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.

Acid, Salicylic, B.P.—1s. 4d. to 1s. 5d. per lb. Technical.—11¾d. to 1s. per lb.

Acid, Tannic B.P.—2s. 9d. to 2s. 11d. per lb.

Acid, Tartaric.—1s. 1d. per lb., less 5%. Firmer.

Amidol.—9s. per lb., d/d.

Acetanilide.—1s. 6d. to 1s. 8d. per lb. for quantities.

Amidopyrin.—11s. 3d. to 11s. 6d. per lb.

Ammonium Benzoate.—3s. 3d. to 3s. 6d. per lb., according to quantity.

Ammonium Carbonate B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated: lump, 1s. per lb.; powder, 1s. 3d. per lb.

Aspirin.—2s. 4d. per lb. Good demand.

Atropine Sulphate.—11s. per oz. for English make.

Barbitone.—8s. 9d. per lb.

Benzonaphthol.—3s. 3d. per lb. spot.

Bismuth Carbonate.—12s. 3d. to 14s. 3d. per lb.

Bismuth Citrate.—9s. 3d. to 11s. 3d. per lb.

Bismuth Salicylate.—10s. to 12s. per lb.

Bismuth Subnitrate.—10s. 6d. to 12s. 6d. per lb., all above bismuth salts, according to quantity.

Bismuth Nitrate.—6s. 9d. per lb.

Bismuth Oxide.—13s. 9d. per lb.

Bismuth Subchloride.—11s. 9d. per lb.

Bismuth Subgallate.—9s. 9d. per lb.

Borax B.P.—Crystal, £24 per ton; powder, £25 per ton. Carriage paid any station in Great Britain, in ton lots.

Bromides.—Potassium, 1s. 11d. to 2s. 1d. per lb.; sodium, 2s. 2d. to 2s. 4d. per lb.; ammonium, 2s. 4d. to 2s. 6d. per lb., all spot. Market firmer.

Calcium Lactate.—1s. 4d. to 1s. 5d.

Chloral Hydrate.—3s. 2d. to 3s. 5d. per lb., duty paid.

Chloroform.—2s. 3d. to 2s. 7½d. per lb., according to quantity.

Creosote Carbonate.—6s. per lb.

Ether Meth.—1s. 1d. to 1s. 11½d. per lb., according to sp. gr. and quantity. Ether purif. (Aether B.P., 1914), 2s. 3d. to 2s. 4d., according to quantity.

Formaldehyde.—£39 per ton, in barrels ex wharf.

Guaiacol Carbonate.—6s. 6d. to 7s. per lb.

Hexamine.—2s. 4d. to 2s. 6d. per lb.

Homatropine Hydrobromide.—30s. per oz.

Hydrastine Hydrochloride.—English make offered at 120s. per oz.

Hydrogen Peroxide (12 vols.).—1s. 5d. per gallon f.o.r. makers' works, naked.

Hydroquinone.—4s. per lb., in cwt. lots.

Hypophosphites.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

Iron Ammonium Citrate B.P.—2s. 1d. to 2s. 4d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 2d. to 2s. 5d. per lb.

Iron Perchloride.—22s. per cwt., 112 lb. lots.

Magnesium Carbonate.—Light Commercial, £33 per ton net.

Magnesium Oxide.—Light Commercial, £67 10s. per ton, less 2½%; Heavy Commercial, £22 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb., in 1 cwt. lots.

Menthol.—A.B.R. recrystallised B.P., 18s. 9d. per lb. net; Synthetic, 12s. to 13s. per lb., according to quantity; 10s. 6d. for 1 cwt. lots and upwards; Liquid (95%), 12s. per lb.; Detached Cryst., 14s. 6d. per lb.

Mercurials.—Red Oxide, 6s. 5d. to 6s. 7d. per lb., levig., 6s. 1d. per lb.; Corrosive Sublimate, Lump, 4s. 3d. per lb., Powder, 4s. 7d. per lb.; White Precipitate, 5s. 1d. per lb., Powder, 5s. 1d. per lb., Extra Fine, 5s. 1d. to 5s. 2d. per lb.; Calomel, 5s. 3d. to 5s. 5d. per lb.; Yellow Oxide, 5s. 10d. to 5s. 11d. per lb.; Persulph., B.P.C., 5s. 1d. to 5s. 2d. per lb.; Sulph. nig., 4s. 10d. to 4s. 11d. per lb.

Methyl Salicylate.—1s. 6d. to 1s. 9d. per lb.

Methyl Sulphonal.—15s. to 15s. 3d. per lb.

Metol.—11s. per lb. British make.

Paraformaldehyde.—1s. 9d. per lb. for 100% powder.

Paraldehyde.—1s. to 1s. 4d. per lb.

Phenacetin.—3s. 9d. to 4s. per lb.

Phenazone.—5s. 9d. to 6s. per lb.

Phenolphthalein.—6s. to 6s. 3d. per lb.

Potassium Bitartrate 99/100% (Cream of Tartar).—90s. per cwt., less 2½% for ton lots.

Potassium Citrate.—1s. 11d. to 2s. 2d. per lb.

Potassium Ferricyanide.—1s. 9d. per lb., in cwt. lots.

Potassium Iodide.—16s. 8d. to 17s. 2d. per lb. for 1 cwt. lots.

Potassium Metabisulphite.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

Potassium Permanganate.—B.P. crystals, 6d. per lb., spot.

Quinine Sulphate.—2s. per oz., 1s. 8d. to 1s. 9d. for 1000 oz. lots in 100 oz. tins.

Resorcin.—4s. per lb., spot.

Saccharin.—55s. per lb.

Salol.—3s. to 3s. 3d. per lb.

Sodium Benzoate, B.P.—1s. 10d. to 2s. 2d. per lb.

Sodium Citrate, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb. **B.P.C., 1923**—2s. to 2s. 2d. per lb. for 1 cwt. lots. **U.S.P.**, 1s. 11d. to 2s. 2d. per lb., according to quantity.

Sodium Ferrocyanide.—4d. per lb. carriage paid.

Sodium Hyposulphite, Photographic.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.

Sodium Nitroprusside.—16s. per lb.

Sodium Potassium Tartrate (Rochelle Salt).—77s. 6d. to 82s. 6d. per cwt., according to quantity.

Sodium Salicylate.—Powder, 1s. 9d. to 1s. 10d. per lb. **Crystal,** 1s. 10d. to 1s. 11d. per lb.

Sodium Sulphide, pure recrystallised.—10d. to 1s. 2d. per lb.

Sodium Sulphite, anhydrous, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.

Sulphonal.—10s. to 10s. 3d. per lb.

Tartar Emetic, B.P.—Crystal or powder, 1s. 10d. to 2s. 1d. per lb.

Thymol.—Puriss., 11s. 9d. to 13s. 9d. per lb., according to quantity. Firmer. Natural, 14s. 9d. per lb. Cheaper.

Perfumery Chemicals

Acetophenone.—7s. 3d. per lb.

Aubepine (ex Anethol).—10s. 3d. per lb.

Amyl Acetate.—2s. per lb.

Amyl Butyrate.—5s. 6d. per lb.

Amyl Salicylate.—3s. per lb.

Anethol (M.P. 21/22° C.).—5s. 6d. per lb.

Benzyl Acetate from Chlorine-free Benzyl Alcohol.—2s. per lb.

Benzyl Alcohol free from Chlorine.—2s. per lb.

Benzaldehyde free from Chlorine.—2s. 6d. per lb.

Benzyl Benzoate.—2s. 3d. per lb.

Cinnamic Aldehyde Natural.—18s. per lb.

Coumarin.—10s. 9d. per lb.

Citronellol.—15s. per lb.

Citral.—9s. 6d. per lb.

Ethyl Cinnamate.—10s. per lb.

Ethyl Phthalate.—3s. 3d. per lb.

Eugenol.—9s. 6d. per lb.

Geraniol (Palmarosa).—19s. per lb.

Geraniol.—6s. 6d. to 10s. 6d. per lb.

Heliotropine.—4s. 10d. per lb.

Iso Eugenol.—13s. 6d. per lb.

Linalol.—Ex Shui Oil, 12s. per lb. Ex Bois de Rose, 16s. per lb.

Linalyl Acetate.—Ex Shui Oil, 14s. 6d. per lb. Ex Bois de Rose, 18s. per lb.

Methyl Anthranilate.—9s. per lb.

Methyl Benzoate.—4s. 6d. per lb.

Musk Ketone.—36s. per lb.

Musk Xylol.—8s. 6d. per lb.

Nerolin.—3s. 9d. per lb.

Phenyl Ethyl Acetate.—12s. per lb.

Phenyl Ethyl Alcohol.—11s. per lb.

Rhodinol.—28s. 6d. per lb.

Safrol.—1s. 6d. per lb.

Terpineol.—1s. 6d. per lb.

Vanillin.—19s. per lb.

Essential Oils

Almond Oil.—11s. 6d. per lb.

Anise Oil.—3s. 3d. per lb.

Bergamot Oil.—30s. per lb.

Bourbon Geranium Oil.—11s. 3d. per lb.

Camphor Oil.—63s. 6d. per cwt.

Cananga Oil, Java.—20s. per lb.

Cinnamon Oil, Leaf.—6d. per oz.

Cassia Oil, 80/85%.—8s. 9d. per lb.

Citronella Oil.—Java, 85/90%, 2s. 3d. per lb. Ceylon, pure, 1s. 10d. per lb.

Clove Oil.—6s. per lb.

Eucalyptus Oil, 70/75%.—2s. per lb.

Lavender Oil.—Mont Blanc 38/40%, Esters, 20s. 9d. per lb.

Lemon Oil.—9s. 6d. per lb.

Lemongrass Oil.—4s. 6d. per lb.

Orange Oil, Sweet.—10s. 6d. per lb.

Otto of Rose Oil.—Bulgarian, 70s. per oz. Anatolian, 30s. per oz.

Palma Rosa Oil.—9s. 6d. per lb.

Peppermint Oil.—Wayne County, 22s. per lb. Japanese, 8s. 6d. per lb.

Petitgrain Oil.—8s. 3d. per lb.

Sandalwood Oil.—Mysore, 26s. per lb. Australian, 17s. 3d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

LONDON, *February* 24, 1927.

BUSINESS has been more active during the current week, and there has been quite a fair volume of inquiry. Prices all round are firm with an advancing tendency. Export section has been inclined to be on the quiet side.

General Chemicals

ACETONE is a steady market at £57 per ton, ex store.

ACID ACETIC is in good demand for home trade, but only a fair demand for export, price unchanged at convention figures.

ACID CITRIC is quiet at 1s. 2d. per lb., but it is thought that this price will be advanced before very long.

ACID FORMIC.—Demand is fair, and price is well maintained.

ACID LACTIC is unchanged at £43 per ton, for 50% by weight, and there has been quite a good demand.

ACID TARTARIC is extremely firm at 1s. 0¼d. per lb., less 5% c.i.f., and makers are now disinclined to sell further quantities; a further sharp increase in price is not unlikely.

ALUMINA SULPHATE is quietly steady at £6 5s. per ton, for 17-18%.

AMMONIUM CHLORIDE is in very poor demand, at £10 10s. to £19 15s.

COPPER SULPHATE is firmer, and a good business has been transacted on the basis of £24 to £24 10s. per ton.

CREAM OF TARTAR.—Has advanced in price to £88 per ton, and further advances are not unlikely; demand is very good.

EPSOM SALTS.—Unchanged at £5 10s. per ton.

FORMALDEHYDE.—Quiet and steady at £42 to £43 per ton.

LEAD ACETATE.—Very firm at £44 10s. to £45 per ton, for white, and £43 per ton, for brown; the market continues to tend upwards.

METHYL ACETONE is extremely firm at about £60 per ton, for high grade material.

METHYL ALCOHOL.—Unchanged at £26 per ton; demand poor.

POTASSIUM CHLORATE.—Firm and inclined to be scarce at 3½d. per lb.

POTASSIUM PERMANGANATE.—Nominal at 7½d. per lb., for B.P.

POTASSIUM PRUSSIATE.—Very firm and scarce at 7½d. per lb.

SODIUM ACETATE.—Has been in fair demand at the price of £19 to £19 10s. per ton.

SODIUM BICHROMATE.—Unchanged at British makers' figures.

SODIUM HYPOSULPHITE.—British makers' prices unchanged, but there is a certain amount of continental competition on the commercial quality.

SODIUM NITRITE.—Only a poor demand, but price is unchanged at £19 10s. per ton.

SODIUM PRUSSIATE is very firm at 4¾d. per lb.

SODIUM SULPHIDE.—Unchanged at British makers' figures.

ZINC SULPHATE.—Extremely firm at £14 per ton.

Coal Tar Products

The market for coal tar products remains steady, with little change to report from last week.

90's BENZOL is worth about 1s. 0¼d. per gallon, on rails, while the motor quality is quoted at about 1s. 8¾d. per gallon.

PURE BENZOL is quoted at from 2s. 9d. to 3s. per gallon.

CREOSOTE OIL is unchanged, and is quoted at 7¼d. to 7½d. per gallon, on rails in the country, while the price in London is about 8¼d. to 8¾d. per gallon.

CRESYLIC ACID remains steady at 2s. per gallon, on rails for the pale quality 97-99%, while the dark quality 95-97% is worth about 1s. 11d. per gallon.

SOLVENT NAPHTHA is unchanged, and is worth about 1s. 5d. per gallon, on rails.

HEAVY NAPHTHA is quoted at 1s. 2d. to 1s. 3d. per gallon, on rails.

NAPHTHALENES are unchanged, the 76-78 quality being worth about £8 5s. to £8 15s. per ton, while the 74-76 quality is worth about £7 15s. to £8 per ton.

PITCH.—Supplies are not abundant and the market has a somewhat firmer tone. To-day's value is 120s. to 130s. per ton, f.o.b. U.K. port.

Latest Oil Prices

LONDON.—February 23.—LINSEED OIL in better demand at a decline of 5s. to 7s. 6d. Spot, £33 10s., ex mill; February £31 12s. 6d.; March-April, £31 10s.; May-August, £31 5s.; September-December, £31 15s. RAPE OIL quiet. Technical, refined, £48; crude, extracted naked, £46, ex wharf. COTTON OIL quiet. Refined common edible, £42; Egyptian, crude, £35 10s.; deodorised, £44. TURPENTINE firm but quiet at 3d. to 1s. per cwt. advance. American, spot, 46s. 9d.; March-April, 47s. 6d.; May-June, 48s.; and July-December, 49s. 6d.

HULL.—February 23.—LINSEED OIL.—Spot and February, £32 5s.; March-April and May-August, £31 17s. 6d.; September-December, £32 5s. COTTON OIL.—Naked, Bombay crude, £34; Egyptian crude, £35 15s.; edible refined, £39 6s.; technical, £38; deodorised, £41 5s. PALM KERNEL OIL.—Crushed naked, 5½ per cent., £39 10s. GROUNDNUT OIL.—Crushed-extracted, £43 10s.; deodorised, £47 10s. SOYA OIL.—Extracted and crushed, £34 10s.; deodorised, £38. RAPE OIL.—Crude-extracted, £45 10s.; refined, £47 10s. per ton. CASTOR OIL and COD OIL unaltered.

Calcium Cyanamide

THE demand continues active. The usual increase of 2s. per ton brings the price for March to £9 16s. per ton, delivered in four-ton lots, carriage paid to any railway station in Great Britain.

No Reduction of Nitrate Export Tax

THE Minister of Finance conferred recently with representatives of the nitrate industry. The Minister declared on behalf of the Government—first, that after June 30 the Government would not permit a continuance of the present system of the sale of nitrate; secondly, they would not modify the export tax, considering that any attempt to reduce it would be against the country's interests; thirdly, the Government would allow to remain pending until February 26 the three following questions: (1) Whether to establish a tax upon idle nitrate plants in order to stimulate export, in case it finds such idleness unjustified; (2) whether to take any other proceedings as a result of renewal of activity; (3) whether the Government would accord facilities for aiding nitrate producers in case work was renewed. The Minister has submitted 26 questions covering all phases of the present nitrate crisis to the President of the Nitrate Producers' Association.

Tariff Changes

PALESTINE.—A Government notification published on January 1 announces that the undermentioned articles are not generally considered to fall within the terms "Drugs, raw and prepared," which were added last year to the Schedule of the Customs Duties Exemption Ordinance, 1924:—Sulphuric acid, hydrochloric acid, nitric acid, citric acid, tartaric acid, carbonic acid, carbonate of soda, chlorate of potassium, castor oil, saccharine, and vaseline.

CZECHOSLOVAKIA.—In virtue of an Order dated December 22, the Customs duty on sulphate of ammonia (Tariff No. 599/g/2) imported into Czechoslovakia has been reduced from 72 to 21·60 kronen per 100 kilogs. for the period January 1 to June 30, 1927.

COLOMBIA.—A recent Decree lays down regulations for the control of the import and manufacture of pharmaceutical specialities in Colombia. The Decree provides that all importers and manufacturers of pharmaceutical specialities, and all sales agents for foreign firms which manufacture these goods, must present the formula and a sample of their preparations to the Commission of Pharmaceutical Specialities. The preparations will be analysed, and from this analysis it will be decided whether or not their consumption is to be permitted, and, if permitted, whether a medical prescription is to be necessary and whether their sale is to be restricted to certain pharmacies. The interested party is required to pay the cost of the analysis and a fee of 1½ pesos in addition.

ROUMANIA.—According to a Roumanian Customs Circular dated December 13, 1926, new consumption and communal fund taxes, which are applicable to both imported and native goods, came into force on December 11, 1926, on the following:—Paraffin wax and stearine, sugar, glucose, caustic soda, olive oil, and other vegetable oils imported or manufactured in the country by industrial concerns, and essential oils. For details concerning these articles the *Board of Trade Journal* for February 17 should be consulted.

A PLANT capable of producing twenty thousand gallons of power alcohol weekly from sugar cane has been opened at Planet Creek, Queensland.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, February 23, 1927.

BUSINESS in heavy chemicals still remains good, with a fair proportion of orders in relation to offers made. There are no changes in prices of any importance to record.

Industrial Chemicals

ACID ACETIC.—98/100%, £55 to £67 per ton, according to quantity and packing, c.i.f. U.K. ports; 80% pure, £37 10s. per ton, ex wharf; 80% technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystal, granulated or small flakes, £34 per ton; powder, £36 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—In moderate demand and price unchanged at about 6¼d. per lb., delivered or f.o.b. U.K. ports, but this figure could probably be shaded for important quantities.

ACID CITRIC, B.P. CRYSTALS.—In rather better demand, but quoted price unchanged at 1s. 2¾d. per lb., less 5%, ex store. Offered for prompt shipment from the Continent at 1s. 2½d. per lb., less 5%, ex wharf.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality 4s. 9d. per carboy. Dearsenicated quality 6s. 3d. per carboy, ex works.

ACID NITRIC, 80%.—Quoted £23 5s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—Spot material still in limited supply, but still available 4d. per lb., ex store. Offered from the Continent at 3⅞d. per lb., ex wharf.

ACID SULPHURIC, 144°.—£3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—In good demand and price increased to about 11½d. per lb., less 5%, ex store. Offered for early delivery at 11⅜d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE, 17/18%, IRON FREE.—Spot material on offer at about £6 per ton, ex store. Quoted £5 8s. 6d. per ton, c.i.f. U.K. ports, prompt shipment from the Continent.

ALUM POTASH.—Lump quality quoted at about £8 7s. 6d. per ton, c.i.f. U.K. ports. Crystal powder 5s. per ton less. Spot prices, £9 2s. 6d. and £8 10s. per ton, ex store, respectively.

AMMONIA ANHYDROUS.—On offer at 9¾d. per lb., ex store. Containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powder, £39 per ton, packed in 5 cwt. casks delivered or f.o.b. U.K. ports.

AMMONIA LIQUID, 880.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of English manufacture unchanged at about £23 to £24 per ton, ex station. Continental on offer at £20 15s. per ton, c.i.f. U.K. ports. Fine white crystals of Continental manufacture quoted £18 10s. per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—On offer for early delivery at £19 5s. per ton, ex wharf. Spot material quoted £20 per ton, ex store.

BARIUM CARBONATE, 98/100%.—White powdered quality quoted £6 15s. per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Large white crystals quoted £8 per ton, c.i.f. U.K. ports, packed in bags. Casks 7s. 6d. per ton extra. Offered on spot at about £9 12s. 6d. per ton, ex store.

BARYTES.—English material unchanged at £5.5s. per ton, ex works. Continental quoted £5 per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—Contract price to consumers £8 per ton, ex station, minimum 4 ton lots. Spot material 10s. per ton extra. Continental now quoted £7 10s. per ton, c.i.f. U.K. ports.

BORAX.—Granulated, £19 10s. per ton; crystals, £20 per ton; powder, £21 per ton, carriage paid U.K. ports.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 12s. 6d. to £5 17s. 6d. per ton, ex station. Continental quoted £3 17s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or at £4 12s. 6d. per ton, f.o.b. U.K. ports for export.

COPPER SULPHATE.—English material quoted £23 per ton, f.o.b. U.K. ports. Continental on offer at £21 10s. per ton, c.i.f. U.K. ports.

FORMALDEHYDE, 40%.—Quoted £38 10s. per ton, c.i.f. U.K. ports. Spot material available at about £40 per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental now quoted £2 15s. per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material on offer at about £33 15s. per ton, ex store.

LEAD, WHITE.—Quoted £35 per ton, ex store.

LEAD ACETATE.—White crystals quoted £42 15s. per ton, c.i.f. U.K. ports; brown about £40 5s. per ton, c.i.f. U.K. ports; white crystals on spot quoted £44 5s. per ton, ex store.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

MAGNESIUM CHLORIDE.—Quoted £6 per ton, c.i.f. U.K. ports.

POTASH, CAUSTIC, 88/92%.—Solid quality unchanged at £27 5s. per ton, c.i.f. U.K. ports, minimum 15 ton lots. Smaller quantities 15s. per ton extra. Liquid, 50° Be, £14 10s. per ton, c.i.f. U.K. ports, minimum 15 ton lots.

POTASSIUM BICHROMATE.—Unchanged at 4¾d. per lb., delivered.

POTASSIUM CARBONATE.—96/98%, quoted £25 5s. per ton, ex wharf, early delivery. Spot material on offer at £26 10s. per ton, ex store; 90/94% quality quoted £22 5s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE, 98/100%.—Powdered quality on offer at £24 5s. per ton, c.i.f. U.K. ports. Crystals, £2 per ton extra.

POTASSIUM NITRATE (SALTPETRE).—On offer for prompt shipment from the Continent at £21 5s. per ton, c.i.f. U.K. ports, spot material available at £23 5s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 6¾d. per lb., ex store, spot delivery. On offer for early shipment at 6½d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Offered for early delivery at 7¼d. per lb., f.o.b. U.K. port. Spot material quoted 7½d. per lb., ex store.

SODA CAUSTIC.—Powder, 98/99%, £19 7s. 6d. per ton; 76/77%, £15 10s. per ton; 70/72%, £14 10s. per ton, carriage paid station, minimum 4 ton lots on contract. Spot material 10s. per ton extra.

SODIUM ACETATE.—English material quoted £22 10s. per ton, ex store. Continental on offer at about £19 per ton, c.i.f. U.K. ports.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3¼d. per lb., delivered buyers' works.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powder or pea quality £1 7s. 6d. per ton more; alkali, 59%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 2s. 6d. per ton, ex station, minimum 4 ton lots. Continental quality offered at £8 per ton, ex wharf, prompt shipment, packed in bags. Casks, 10s. per ton extra. Pea crystals, photographic quality, of British manufacture, quoted £14 10s. per ton, ex station.

SODIUM NITRATE.—Ordinary quality quoted £13 per ton, ex store. Refined quality 5s. per ton extra.

SODIUM NITRITE, 100%.—Spot material now quoted £20 5s. per ton, ex store.

SODIUM PRUSSIATE (YELLOW).—Now quoted 4⅞d. per lb., ex store, spot delivery. Offered for prompt shipment at 4¼d. per lb., ex wharf.

SODIUM SULPHATE (SALTCAKE).—Price for home consumption £3 7s. 6d. per ton, ex works.

SODIUM SULPHIDE.—60/65%, solid, £12 10s. per ton; broken, £13 10s. per ton; flake, £14 10s. per ton; crystals, 31/34%, £8 10s. per ton, and £9 per ton, according to quality, delivered buyers' works, minimum 4 ton lots on contract. Price for spot 5s. per ton extra for solid, 2s. 6d. per ton extra for crystals; 60/62%, solid quality offered from the Continent at about £9 7s. 6d. per ton, c.i.f. U.K. ports; broken, 15s. per ton extra.

SULPHUR.—Flowers, £12 10s. per ton; roll, £11 10s. per ton; rock, £11 10s. per ton; floristella, £11 per ton; ground American, £9 15s. per ton. Ex store. Prices nominal.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports; 98/100%, solid on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports; powdered 20s. per ton extra.

ZINC SULPHATE.—Continental material on offer at about £10 10s. per ton, ex wharf.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

Coal Tar Intermediates

META XYLIDINE ACETATE.—2s. 6d. per lb. Some home inquiries.

DIMETHYLANILINE.—2s. per lb. Some home inquiries.

ORTHO TOLUIDINE.—7½d. per lb. Some inquiries.

BENZIDINE BASE.—3s. 3d. per lb. Small home inquiries.

ANTHRANILIC ACID.—6s. per lb. Some inquiries.

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, February 24, 1927.

The demand for heavy chemicals on the Manchester market during the past week can at the best be described as of a quietly steady character, but the satisfactory feature of the situation is that the present scale of business represents a gradual improvement. Home industrial consumers in many cases seem to show a readier disposition to discuss matters and are taking more interest in the question of forward deliveries. Inquiry for shipment continues to be reported, but there is little if any improvement in the volume of actual business being done on export account.

Heavy Chemicals

Bichromate of soda still meets with a moderate inquiry and prices are quite steady at 3⅛d. per lb. There is only a quiet business stirring in the case of hyposulphite of soda, but values are maintained at about £15 2s. 6d. per ton for photographic material and £10 per ton for commercial. The demand for sulphide of soda this week has been slow and there is some easiness in the price position, the commercial quality offering at £8 7s. 6d. per ton and the 60–65 per cent. concentrated solid at about £11. Chlorate of soda is unchanged on the week at 3d. per lb., but inquiry for this material is still inactive.

Alkali continues to move off in fair quantities and prices are firm at about £6 15s. per ton. Caustic soda is also a strong section of the market and a steady trade is being done at from £14 10s. to £16 10s. per ton according to quality. Nitrite of soda is fairly steady at round £19 5s. per ton and a quiet demand is being met with. In the case of phosphate of soda buying interest seems to be restricted, with current offers at about £12 10s. per ton. Glauber salts are unchanged either in position or value, inquiry being slow at about £3 2s. 6d. per ton. Prussiate of soda continues to display firmness on relative scarcity, but the demand for this is not particularly brisk; to-day's price is 4¼d. per lb. Bleaching powder keeps steady and meets with a fair amount of inquiry at £8 per ton. In bicarbonate of soda a quietly steady trade is being put through and values are well held at about £10 10s. per ton; saltcake is maintained at from £3 10s. to £3 15s. per ton, and a quiet demand for this material has been reported here during the past week.

Sales of chlorate of potash are of rather limited extent with current values at round 3¾d. per lb. A moderate demand for bichromate of potash is still being experienced at about 4⅛d. per lb. For permanganate of potash inquiry is slow to improve, though values seem to have steadied at about 6d. per lb. for B.P. quality and 4¾d. to 5d. for commercial. Yellow prussiate of potash is maintained at 7¼d. per lb. and a quiet trade in this material is being done. Both for caustic potash and for carbonate the demand is fairly satisfactory, and in each case prices are steady at round £29 and £26 5s. per ton respectively.

For sulphate of copper home and export demand is on a fair scale, with current f.o.b. prices at £24 7s. 6d. to £24 10s. per ton. There is not very much inquiry just now for arsenic, but as there is no surplus of supplies values keep up at £17 5s. to £17 10s. per ton at the mines for white powdered Cornish makes. The demand for lead acetate continues on quiet lines, with white material offering at £44 per ton and brown at £40 to £41, while nitrate of lead, which is also slow, is quoted at about £40. Although still easy there is little quotable change in the case of acetate of lime, grey fetching £15 10s. to £15 15s. and brown about £8 17s. 6d., but there is only a poor call for this just now.

Acids and Tar Products

There is a certain amount of business passing in tartaric acid and prices show increased steadiness at round 11¾d. per lb. Citric acid, however, remains in limited demand with values much as they were a week ago at about 1s. 2¾d. per lb. Oxalic acid is still well held at from 3¾d. to 4d. per lb. and offers of this material are on a relatively limited scale. Acetic acid moves off in fair quantities at firm prices, glacial ranging from £66 to £67 per ton and 80 per cent. commercial material at about £37.

The tendency of pitch is still easy and actual business is on quiet lines; to-day's value for export is about £5 7s. 6d. per ton, f.o.b. Solvent naphtha meets with a slow demand at from 1s. 7½d. to 1s. 7¾d. per gallon, whilst creosote oil is quiet at round 7½d. per gallon. There is only a quiet call for carbolic acid at the present time, but quotations are fairly steady at about 6¼d. per lb. for crystals.

Structure of the Cotton Hair

A meeting of the Manchester Section of the Society of Dyers and Colourists was held on Friday, February 18 (Mr. J. R. Hannay, F.I.C., presiding), when Mr. F. P. Slater read a paper entitled "A picture of the structure of the cotton hair as an aid to the interpretation of some phenomena."

Mr. Slater traced the development of the cotton hair on the cotton seed. The hair developed in two stages. Firstly, it grew in length, having the form of a long tube with very thin walls. Then, growth in length having been completed, growth in thickness began by the deposition of cellulose in a series of concentric shells on the inner wall, one per night, with the result that in cross-section the hair had the appearance of a section through the trunk of a tree. The micro-structure of the thin outer wall, called the primary wall, was very different from that of the cellulose thickening, called the secondary wall. After suitable treatment, or if viewed in polarised light, the secondary wall was seen to consist of a large number of fibrils arranged in a spiral form, the direction of the spiral reversing at frequent intervals along the hair. These spirals were known as "quick" spirals to distinguish them from another set of spirals which traversed the length of the hair with a finer pitch. The hair could thus be divided up into a large number of units, which were not, however, the ultimate structural units. A diagrammatic picture of the structure of the hair was shown, embodying the details seen under the microscope and the information gleaned from the study of its development in growth.

With the aid of this picture of the sponge-like structure of the fibre it was possible to visualise some of the physical and physico-chemical properties of cotton. Such properties as the density of the hair, its moisture absorption, its strength and elasticity, its compressibility in regard to yarn structure, its tendency to disintegrate or tender under the influence of acids, and the variation in the shade of dye taken by different cottons and by different hairs in the same cotton were discussed in relation to this picture.

Mr. Carr on Insulin

At the Royal Society of Arts on Wednesday, Mr. F. H. Carr delivered an address on "Insulin and its Manufacture." He said that the discovery of insulin had held the imagination of the general public in a greater degree than perhaps any other discovery in pharmacology and chemistry. At this distance of time—five years after the event—it was possible to appraise with some accuracy the value of the work of Banting and Best in discovering insulin. Time had not only justified the dramatic reception accorded to it, but had proved the utility of insulin to be perhaps even greater than was anticipated, both in the relief of suffering and in opening out the avenues to new knowledge. To-day our knowledge in regard to insulin had only proceeded to the point at which we were able to prepare it in a purified form from natural sources. The physiologist had discovered much about its properties, but the chemist had learnt but little of its nature. The elucidation of the chemical nature of insulin itself was the step to be most profoundly desired. It might be that this would involve the destruction of as much as £1,000 worth of insulin, but the priceless contribution to human happiness which the discovery of insulin represented made even that expense appear to be but a grain of sand on the seashore. Once we understood the chemical nature of insulin, it was not too much to expect that the history of adrenalin and thyroxine would be repeated, and insulin, like the two latter, would be manufactured artificially.

Chemical Manufacturer's Bankruptcy

In the compulsory liquidation of Kathijax, Ltd., chemical manufacturers and dealers, of 109, Kingsway, London, W.C., the Official Receiver has now issued to the creditors a summary of the statement of affairs. This shows liabilities £1,729, assets £128, and a total deficiency of £1,877 with regard to the shareholders. A liquidator has been appointed.

Company News

DELTA METAL CO.—A dividend of 12½ per cent., free of income tax, is recommended for the year, and £17,040 is to be carried forward, subject to any contribution voted to employés' welfare and benefit fund.

WILLIAM GOSSAGE AND SONS.—The profit for the year to November 30 last amounts to £137,661. The board proposes to provide a dividend of 20 per cent. on the ordinary shares and to carry forward £6,098.

TORBAY PAINT CO.—A dividend of 10 per cent., less tax, is recommended for the year ended December 31 last, and the directors propose to write off the whole of the balance of the formation expenses of the company.

BRITISH ALIZARINE CO., LTD.—The report for the year ended December 31 last states that the accounts show a profit of £11,808, to which must be added £57,488 brought forward, making £69,386. The directors have written off £20,000 and recommend that the balance of £49,386 shall be carried forward. The annual meeting will be held in Manchester on February 28, at 3 p.m.

COURTAULDS, LTD.—After charging all taxation, depreciations and expenses, the profits for the year 1926 amount to £3,840,791, as compared with £5,111,410 for 1925 and £4,530,745 for 1924. The directors have decided to carry £750,000 to general reserve account and recommend the payment of a final dividend on the ordinary shares for 1926 of 3s. 3d. per share, free of income tax, and to carry forward the balance of £1,036,797 19s. The general reserve will also benefit by a sum of £1,250,000 transferred from taxation reserves as no longer required. The transfer books of the company were closed from February 18 to 24 (both days inclusive) for the ordinary shares, and the dividend will be payable on March 11 to the ordinary shareholders registered on February 17.

YORKSHIRE INDIGO, SCARLET AND COLOUR DYERS.—For the year ended December 31 last, the report states that in order to meet the loss on trading and interest on the debenture stock there has been transferred £16,000 from reserve and £3,000 from investment reserve, which, with the credit balance of £1,184 brought forward, gives a total of £20,184. The loss for the year, after providing for depreciation and all other charges, came to £15,112, and debenture interest absorbed £4,572, leaving a balance of £499 to be carried forward. The report adds that the trading outlook at the beginning of the year was encouraging, but from the commencement of the general strike in May the volume of trade steadily shrunk. The high price of coal played an important part in connection with the trading loss, the increased cost of motive power and steam for the year amounting to £15,875 on a reduced turnover.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

VARIOUS GOODS.—The Roumanian Army Explosives Department has published (in the Official Gazette of February 9) a call for tenders for the following materials to be presented by 9 a.m. on March 4: 7,000 kg. flatting varnish, 1,000 kg. turpentine, 900 kg. siccative (for drying varnish), 4,000 kg. zinc white, 2,500 kg. linseed oil, 900 kg. chrome yellow, 800 kg. ultramarine, 800 kg. Paris blue, 800 kg. lamp black, 1,000 kg. ochre, 3,450 kg. white petroleum jelly, 1,120 kg. white starch, 3,175 kg. joiners' glue, 450 kg. shellac in orange tablets, 43 kg. black "touche," 1,120 kg. paraffin wax, 740 kg. caustic soda. The Department of Overseas Trade is prepared to supply British firms with the names of agents likely to handle tenders on their behalf. (Reference B. 3,267.)

THE CANADIAN RAYON PULP CO. are making preparations for the construction of its proposed chemical pulp mill on Poplar Island, B.C. The plant will consist of a number of units, including pulp mill, sawmill, power house, machine shop and miscellaneous buildings. The pulp mill will be equipped for an initial production of about 100 tons of bleached pulp per day.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us by Mr. H. T. P. Gee, Patent and Trade Mark Agent, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to March 16, 1927.

"RENNAC."

466,296. Glue. Class 1. Rennacid Casein (London), Ltd., 11, Poultry, London, E.C.2; manufacturers. January 20, 1926. (To be associated. Sect. 24.)

"SAPINAL."

472,675. Wetting-out preparations, being chemical substances for use in the course of manufacture. Class 1. British Dyestuffs Corporation, Ltd., 70, Spring Gardens, Manchester; manufacturers of dyestuffs and chemicals. August 31, 1926. (To be Associated. Sect. 24.)

"SOLBROL."

473,057. Class 2. Disinfectants and pest destroyers. I. G. Farbenindustrie Aktiengesellschaft (a joint stock company organised under the laws of Germany), Mainzer Landstrasse 28, Frankfurt a/Main, Germany; manufacturers. September 15, 1926. (By consent.)

"BURGOYNE'S."

475,608. Class 3. Chemical substances prepared for use in medicine and pharmacy. Burgoyne, Burbidges and Co., Ltd., High Street South, East Ham, London, E.6, wholesale manufacturing chemists. December 7, 1926.

"CRAB TREE."

474,517. Class 4. Raw or partly prepared animal and mineral substances used in manufactures. J. A. Crabtree and Co., Ltd., Lincoln Works, Lincoln Road, Walsall; manufacturers. November 4, 1926. (To be Associated. Sect. 24.)

"SOMUL."

476,041. Class 4. Raw or partly prepared vegetable, animal, and mineral substances used in manufactures. Scottish Oils, Ltd., and the Scottish Oil Agency, Ltd., 53, Bothwell Street, Glasgow; manufacturers and merchants. December 18, 1926.

"TROPEX."

476,330. Class 4. Raw or partly prepared vegetable, animal, and mineral substances used in manufactures. The Chloride Electrical Storage Co., Ltd., Clifton Junction, near Manchester; manufacturers. January 1, 1927.

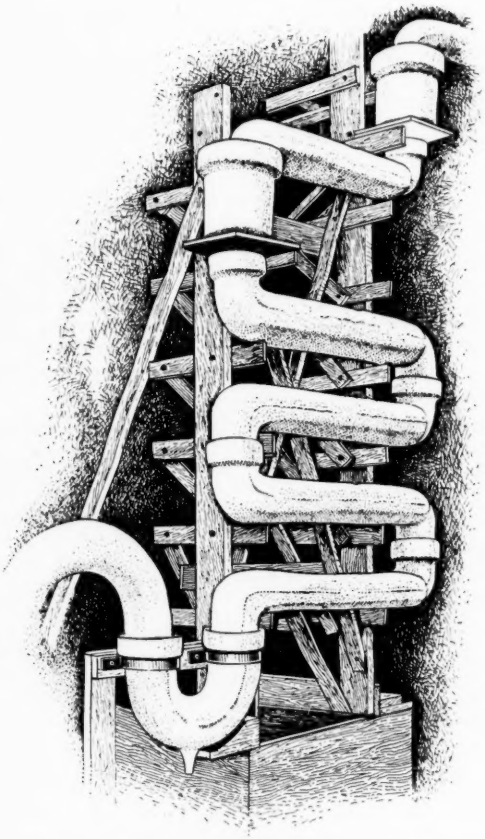
Dr. Carpenter on By-Product Ammonia

AT the ordinary general meeting of the South Metropolitan Gas Co. on Thursday, the chairman, Dr. C. Carpenter, referring to by-product ammonia, said that once a valuable source of income, it had now fallen so low in value that its contribution to reducing the selling price of gas was exceedingly little. Indeed, he believed that in many small undertakings its extraction could now only be carried on at a loss. The production of sulphate of ammonia at gas—or coke oven—works scattered over the country must always be one of small scale compared with the undertakings exploiting at one large establishment its synthetically produced competitor. It was pretty certain that in their own works handling over one and a quarter million tons of coal per annum considerable readjustments of their methods would have ere long to be undertaken. These were the subject of consideration and experiment to-day.

Rumoured French Chemical Combine

THERE are rumours in France of the formation of a huge combination of the French chemical industries, which is intended to be preliminary to the organisation of a great Franco-German chemical trust on the lines of the steel cartel for the regulation of questions relative to the export trade with foreign countries. The French organisation, it is said, will embrace the following concerns: The Société des Potasses d'Alsace, Alais, Froges, Camargue, the Phosphates de Gafsa, the Azote de Toulouse, the Kuhlmann and Saint Gobain companies. When this is formed, it is understood that the next step will be an agreement with the comprehensive interests of the I.G. Farbenindustrie of Germany.

The "VITREOSIL"



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THESE VESSELS set up Vertically one above the other can be thoroughly Water Cooled.

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ABC Code, 5th & 6th Editions, & Bentley's used

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

MACHIN (G.) AND CO., LTD., London, W., perfume importers, etc. (M., 26/2/27.) Registered February 8, £1,000 debentures (filed under sec. 93 (3) of the Companies (Consolidation) Act, 1908), present issue £700; general charge.

PATERSON LABORATORY CO., LTD., Slough. (M., 26/2/27.) Registered February 7, £4,000 debentures, to Major T. Philipson, Kingsworthy; general charge.

SANKEY (JOHN) AND SON, LTD., Manchester, soap manufacturers. (M., 26/2/27.) Registered February 10, £4,000 (not ex.) mortgages, to Bank; charged on leasehold land and hereditaments in Radium Street and Bengal Street, Manchester. *Nil. December 27, 1926.

London Gazette, &c.

Companies Winding Up Voluntarily

DIRECT DRUGS, LTD. (C.W.U.V., 26/2/27.) A. Borrows, Esq., A.C.A., 2, Guildhall Chambers, Basinghall Street, London, E.C.2, appointed liquidator, February 16. Meeting of creditors at the offices of the liquidator on Wednesday, March 9, at 11 a.m. Creditors' claims by March 8.

KANSAS-OKLAHOMA OIL AND REFINERY CO., LTD. (C.W.U.V., 26/2/27.) G. Edney, Billiter Buildings, Billiter Street, London, E.C.3, appointed liquidator, February 14. Meeting of creditors at 68, Billiter Buildings, Billiter Street, London, E.C.3, on March 4, at 12 noon.

New Companies Registered

BONNY DYE CO., LTD., Freckleton Road, Kirkham, Preston. Registered February 21. Nom. capital, £500 in £1 shares. Manufacturers of all kinds of dyes and colouring matters, particularly of dyes for household purposes, etc.

COAL PRODUCTS AND DERIVATIVES, LTD. Registered February 16. Nom. capital, £10,000 in £1 shares. To acquire the business of manufacturers and merchants of and selling agents for coal derivatives and by-products and chemicals of all kinds hitherto carried on by the partnership firm of Coal Products and Derivatives Co. Directors: A. V. Derry (chairman), Tapton Court, Fulwood Road, Sheffield; C. A. Murray, 13, Adelaide Road, Sheffield; and W. R. L. Davies.

DOMINIONS POTASH SUPPLY CO., LTD. Registered February 18. Nom. capital, £10,000 in £1 shares. Objects: To acquire the business of a manufacturer, etc., of chemicals, industrial and other preparations, potash salts and fertilisers, etc., carried on by J. M. Hattrick, at 41, Eastcheap, London, E.C., as the Potash Supply Co. Directors: J. M. Hattrick, 41, Eastcheap, London, E.C.3, and C. Miller.

HACKWOOD'S SOAP CO., LTD. Registered February 16. Nom. capital, £25,000 in £1 shares. To acquire the business carried on at 64, Bissell Street, Birmingham, as Hackwood's Soap Co., and to carry on the business of soap manufacturers, chemists, druggists, glycerine distillers, tallow melters, etc. Director: C. Hackwood, 8, Wyecliff Road, Handsworth, Birmingham.

"L. AND N." COAL DISTILLATION, LTD., 100, Victoria Street, London, S.W. Registered as a "public" company on February 18. Nom. capital, £250,000 in £1 shares. To adopt an agreement with Sensible Heat Distillation, Ltd., and to carry on the business of manufacturers of and dealers in "L. and N." fuels as solid, liquid, powdered, and gaseous fuels for domestic, industrial, and other purposes, tar, sulphate, and other forms of ammonia, oils, chemicals, and all other products, by-products, and residuals of coal, etc.

MORRIS AND GRIFFIN, LTD., Imperial House, 15, 17, and 19, Kingsway, London, W.C.2. Registered as a "private" company on February 19. Nom. capital, £100 in £1 shares. The objects are to carry on business as glue, gelatine and fertiliser merchants and manufacturers, bone crushers and merchants, grease manufacturers and merchants, manufacturing chemists, etc. Subscribers: R. Duncalfe, "White Beam," Oakwood Avenue, Purley, H. J. Cotes. British Glues and Chemicals, Ltd., are the first managers and secretaries. The file number is 219,793.

Separating Hydrocarbons in Coal Gas

FRACTIONAL distillation is an essential process in the analysis of gaseous hydrocarbons in coal gas, vapours of gasoline, and various other commercial gases and vapours, because the close similarity of the chemical composition of the hydrocarbons makes chemical analyses unsatisfactory. Fractional distillation has been found especially useful in determining the composition of coal gas in the analytical work of the U.S.A. Bureau of Mines. A method has been developed in the Bureau's laboratories whereby the individual saturated and unsaturated hydrocarbons in coal gas can be accurately determined. It was found that the boiling point of the different hydrocarbons—methane, ethylene, ethane, propylene, propane, butylene, and butane—mostly depends upon the number of carbon atoms contained in a molecule of the substance, and is affected very little by differences in structure and unsaturation. The method involves supplementing the usual Orsat analysis by fractional distillation, and can be applied to very small samples, only 50 to 2,000 cubic centimetres of the gas being required.

Leeds University Textile Industries Department

IN connection with the departments of Textile Industries and Colour Chemistry and Dyeing in the University of Leeds it is reported that the university is very desirous of increasing still further the volume of scientific research work undertaken in the textile industries department. When industrial conditions improve, the committee hope that textile manufacturers, realising the value of such work to the industry, will be prepared to contribute to the maintenance of one or more appointments in the department to be filled by scientists experienced in the conduct of original investigations. In the meantime, something could be done by the establishment of scholarships to enable advanced students to remain in the department to carry out research work under the direction of the research chemist, Mr. Speakman.

Benn Brothers' Other Journals

THE CABINET MAKER.—Special Empire Number; Salesmanship for Overseas Markets; British Industries Fair; Review of the Furniture at the White City and Birmingham; Opening of the John Benn Hostel.

DISCOVERY.—How Bees come home, by C. Haldale; History from Antique Flowers, by Dr. F. A. Hampton; Wireless for Whalers; Progress with new Apparatus; Non-inflammable Film, first details, by H. J. Mallabar, F.R.P.S.

THE EXPORT WORLD.—Mr. Herbert Whitworth on Training British Textile Exporters; The British Industries Fair (Illustrated); British Markets in Canada and South America.

THE ELECTRICIAN.—Special Textile Number; Textile Electric Drive Developments, by F. Nasmith; The Electrical Drive of Ring Spinning Frames, by F. B. Holt; Electrical Exhibits at the British Industries Fair.

THE FRUIT GROWER.—Beechams Trust and Covent Garden—Views on the Withdrawal; Lanarkshire Strawberry Disease; Fruit Canning in Vale of Evesham.

GARDENING ILLUSTRATED.—Modern Gladioli and How to Plant them; Broadcasting Sweet Peas, by Charles W. J. Unwin; Cultivation of Cattleyas, by Arthur Sutton; Farmyard Manure and Substitutes.

THE GAS WORLD.—Thoughts on Gas Distribution, by Walter Hole; An Alternative Policy to Municipal Trading; Dr. Charles Carpenter on the Coal Stoppage.

THE HARDWARE TRADE JOURNAL.—Special Empire Issue; Hardware for the Dominions and Colonies: An Analysis; The British Industries Fair: New Products for Home and Overseas Buyers; The Cutlery and Plate Trade; The Committee on Industry and Trade.

THE TIMBER TRADES JOURNAL.—The "Uniform" Contract: Passing of the Property under the Contract; Home-Grown Timber Trade: 25 Years of Change.